APPENDIX N

Laboratory and In-Situ Hydraulic Conductivity Testing Results

HYDRAULIC CONDUCTIVITY TEST

ASTM D 5084 (CONSTANT HEAD)

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1125-0045	SAMPLE	1
PROJECT TITLE		SAMPLE DEPTH, m	2.13-2.68
BOREHOLE NUMBER	12-03-03	DATE	03/12/2013

SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL)

SAMPLE HEIGHT, cm	7.66	UNIT WEIGHT, kN/m^3	15.44
SAMPLE DIAMETER, cm	6.90	DRY UNIT WEIGHT, kN/m^3	8.71
SAMPLE AREA, cm^2	37.40	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm^3	286.59	VOLUME OF SOLIDS, cm^3	94.24
TOTAL MASS, g	451.30	VOLUME OF VOIDS, cm^3	192.34
DRY MASS, g	254.46	VOID RATIO	2.04
WATER CONTENT, %	77.4		

SATURATION STAGE

CELL PRESSURE, kPa	210	EFFECTIVE CONFINING STRESS, kPa	5
HEAD PRESSURE, kPa	205	DURATION, min	2,790
BACK PRESSURE, kPa	205	B COEFFICIENT	0.99

CONSOLIDATION STAGE

CELL PRESSURE, kPa	226	EFFECTIVE CONFINING STRESS, kPa	21
HEAD PRESSURE, kPa	205	DURATION, min	1,425
BACK PRESSURE, kPa	205	VOLUME CHANGE, cm^3	2.7
		DRAINAGE	Top and Bottom

SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)

SAMPLE HEIGHT, cm	7.64	SAMPLE AREA, cm^2	37.17
SAMPLE DIAMETER, cm	6.88	SAMPLE VOLUME, cm^3	283.89

HYDRAULIC CONDUCTIVITY STAGE

CELL PRESSURE, kPa	241	EFFECTIVE CONFINING STRESS, kPa	21
HEAD PRESSURE, kPa	220	DURATION, min	4409.0
BACK PRESSURE, kPa	205	HYDRAULIC GRADIENT, i	20

SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)

SAMPLE HEIGHT, cm	7.64	UNIT WEIGHT, kN/m^3	15.40
SAMPLE DIAMETER, cm	6.88	DRY UNIT WEIGHT, kN/m^3	8.79
SAMPLE AREA, cm^2	37.17	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm^3	283.89	VOLUME OF SOLIDS, cm^3	94.24
TOTAL MASS, g	445.80	VOLUME OF VOIDS, cm^3	189.65
DRY MASS, g	254.46	VOID RATIO	2.01
WATER CONTENT, %	75.2		

TEST RESULTS

ELAPSED TIME TO STEADY STATE FLOW (min)	0.0
DURATION OF STEADY STATE FLOW (min)	4409.0
INFLOW VOLUME UNDER STEADY STATE FLOW (cm^3)	33.6
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm^3)	37.6
HYDRAULIC CONDUCTIVITY (INFLOW) (cm/s)	1.71E-07
HYDRAULIC CONDUCTIVITY (OUTFLOW) (cm/s)	1.91E-07
HYDRAULIC CONDUCTIVITY, K, cm/s	**1.81E-07**

NOTES:

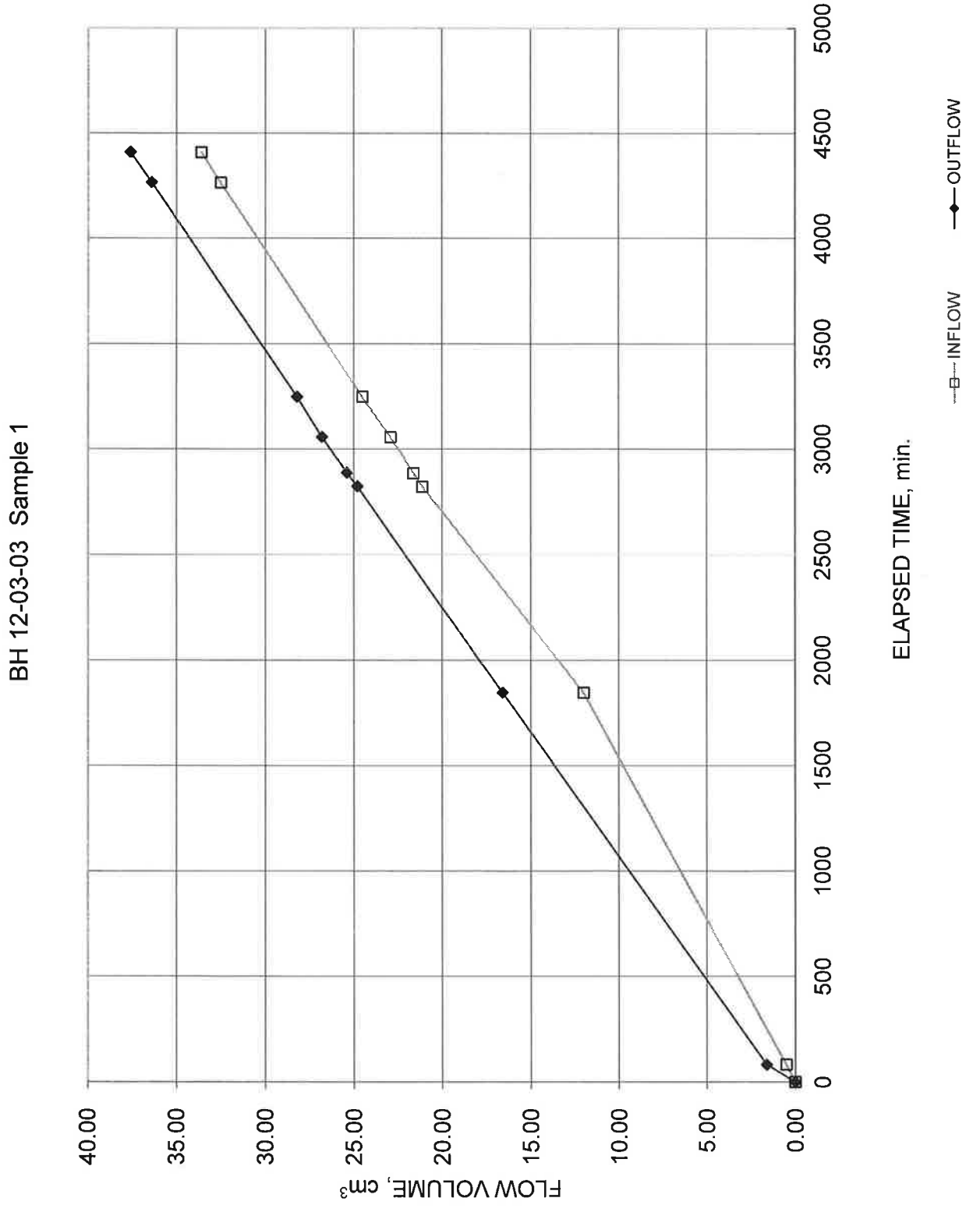
PERMEANT FLUID Deaired tap water

Prepared By:RD

Golder Associates

Checked By:

HYDRAULIC CONDUCTIVITY TEST



Project No: 12-1125-0045
Prepared By: RD

Golder Associates

Checked By:

HYDRAULIC CONDUCTIVITY TEST

ASTM D 5084 (CONSTANT HEAD)

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1125-0045	SAMPLE	3
PROJECT TITLE		SAMPLE DEPTH, m	11.43-12.00
BOREHOLE NUMBER	12-02-03	DATE	03/01/2013

SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL)

SAMPLE HEIGHT, cm	7.48	UNIT WEIGHT, kN/m^3	16.07
SAMPLE DIAMETER, cm	6.92	DRY UNIT WEIGHT, kN/m^3	9.94
SAMPLE AREA, cm^2	37.61	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm^3	281.32	VOLUME OF SOLIDS, cm^3	105.57
TOTAL MASS, g	460.90	VOLUME OF VOIDS, cm^3	175.75
DRY MASS, g	285.03	VOID RATIO	1.66
WATER CONTENT, %	61.7		

SATURATION STAGE

CELL PRESSURE, kPa	350	EFFECTIVE CONFINING STRESS, kPa	5
HEAD PRESSURE, kPa	345	DURATION, min	4,140
BACK PRESSURE, kPa	345	B COEFFICIENT	0.96

CONSOLIDATION STAGE

CELL PRESSURE, kPa	416	EFFECTIVE CONFINING STRESS, kPa	71
HEAD PRESSURE, kPa	345	DURATION, min	1,485
BACK PRESSURE, kPa	345	VOLUME CHANGE, cm^3	5.5
		DRAINAGE	Top and Bottom

SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)

SAMPLE HEIGHT, cm	7.43	SAMPLE AREA, cm^2	37.12
SAMPLE DIAMETER, cm	6.87	SAMPLE VOLUME, cm^3	275.85

HYDRAULIC CONDUCTIVITY STAGE

CELL PRESSURE, kPa	431	EFFECTIVE CONFINING STRESS, kPa	71
HEAD PRESSURE, kPa	360	DURATION, min	4223.0
BACK PRESSURE, kPa	345	HYDRAULIC GRADIENT, i	21

SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)

SAMPLE HEIGHT, cm	7.43	UNIT WEIGHT, kN/m^3	16.27
SAMPLE DIAMETER, cm	6.87	DRY UNIT WEIGHT, kN/m^3	10.13
SAMPLE AREA, cm^2	37.12	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm^3	275.85	VOLUME OF SOLIDS, cm^3	105.57
TOTAL MASS, g	457.60	VOLUME OF VOIDS, cm^3	170.28
DRY MASS, g	285.03	VOID RATIO	1.61
WATER CONTENT, %	60.5		

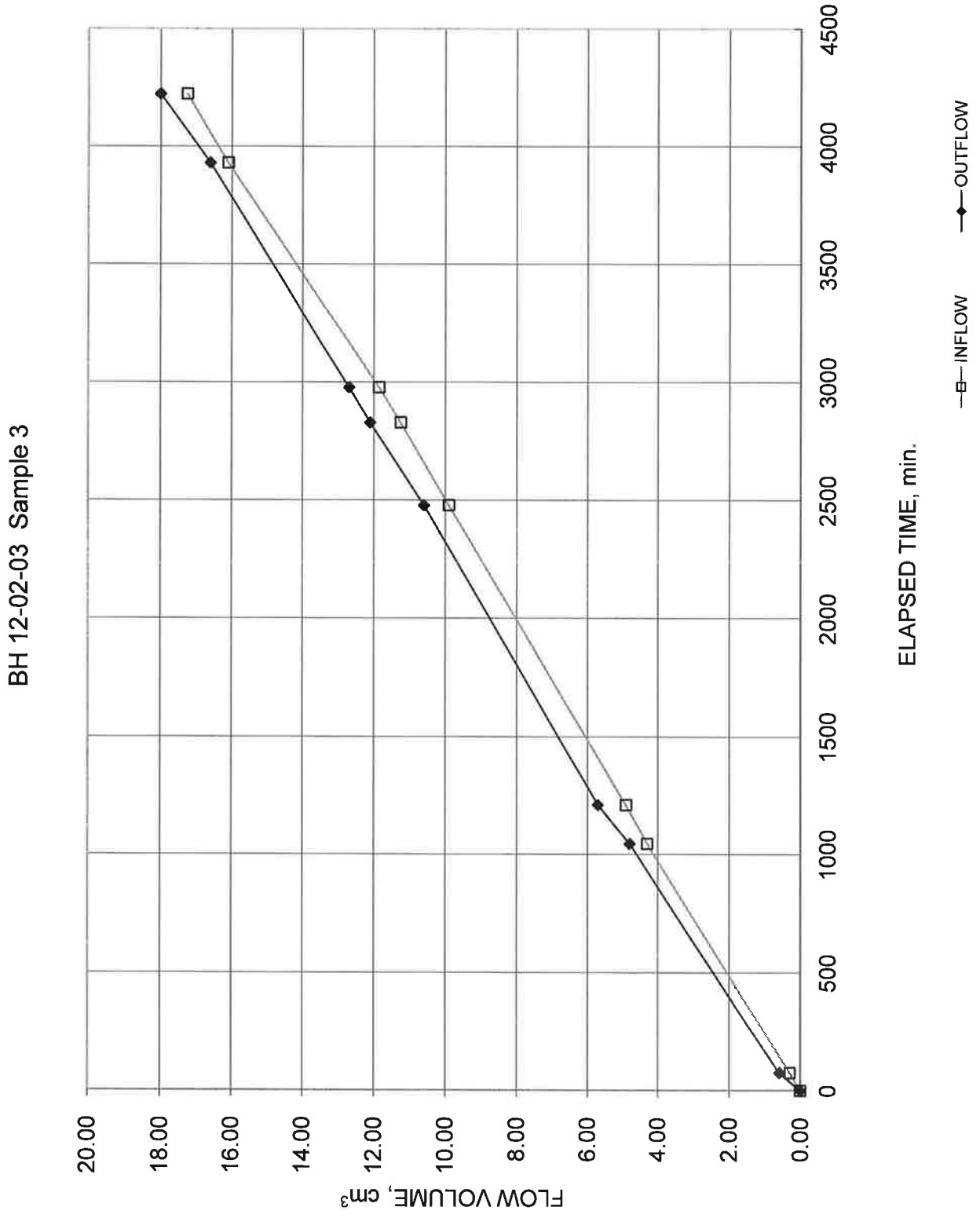
TEST RESULTS

ELAPSED TIME TO STEADY STATE FLOW (min)	0.0
DURATION OF STEADY STATE FLOW (min)	4223.0
INFLOW VOLUME UNDER STEADY STATE FLOW (cm^3)	17.3
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm^3)	18.0
HYDRAULIC CONDUCTIVITY (INFLOW) (cm/s)	8.91E-08
HYDRAULIC CONDUCTIVITY (OUTFLOW) (cm/s)	9.30E-08
HYDRAULIC CONDUCTIVITY, K, cm/s	**9.10E-08**

NOTES:

PERMEANT FLUID	Deaired tap water

HYDRAULIC CONDUCTIVITY TEST



Project No: 12-1125-0045
Prepared By: RD

Golder Associates

Checked By:

HYDRAULIC CONDUCTIVITY TEST

ASTM D 5084 (CONSTANT HEAD)

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1125-0045	SAMPLE	6
PROJECT TITLE		SAMPLE DEPTH, m	21.26-21.82
BOREHOLE NUMBER	12-01-03	DATE	03/01/2013

SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL)

SAMPLE HEIGHT, cm	6.98	UNIT WEIGHT, kN/m^3	15.53
SAMPLE DIAMETER, cm	6.94	DRY UNIT WEIGHT, kN/m^3	9.13
SAMPLE AREA, cm^2	37.84	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm^3	264.26	VOLUME OF SOLIDS, cm^3	91.17
TOTAL MASS, g	418.60	VOLUME OF VOIDS, cm^3	173.09
DRY MASS, g	246.16	VOID RATIO	1.90
WATER CONTENT, %	70.1		

SATURATION STAGE

CELL PRESSURE, kPa	210	EFFECTIVE CONFINING STRESS, kPa	5
HEAD PRESSURE, kPa	205	DURATION, min	2,520
BACK PRESSURE, kPa	205	B COEFFICIENT	0.99

CONSOLIDATION STAGE

CELL PRESSURE, kPa	322	EFFECTIVE CONFINING STRESS, kPa	117
HEAD PRESSURE, kPa	205	DURATION, min	2,250
BACK PRESSURE, kPa	205	VOLUME CHANGE, cm^3	11.5
		DRAINAGE	Top and Bottom

SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)

SAMPLE HEIGHT, cm	6.88	SAMPLE AREA, cm^2	36.74
SAMPLE DIAMETER, cm	6.84	SAMPLE VOLUME, cm^3	252.87

HYDRAULIC CONDUCTIVITY STAGE

CELL PRESSURE, kPa	336	EFFECTIVE CONFINING STRESS, kPa	117
HEAD PRESSURE, kPa	219	DURATION, min	3333.0
BACK PRESSURE, kPa	205	HYDRAULIC GRADIENT, i	21

SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)

SAMPLE HEIGHT, cm	6.88	UNIT WEIGHT, kN/m^3	16.08
SAMPLE DIAMETER, cm	6.84	DRY UNIT WEIGHT, kN/m^3	9.55
SAMPLE AREA, cm^2	36.74	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm^3	252.87	VOLUME OF SOLIDS, cm^3	91.17
TOTAL MASS, g	414.66	VOLUME OF VOIDS, cm^3	161.70
DRY MASS, g	246.16	VOID RATIO	1.77
WATER CONTENT, %	68.5		

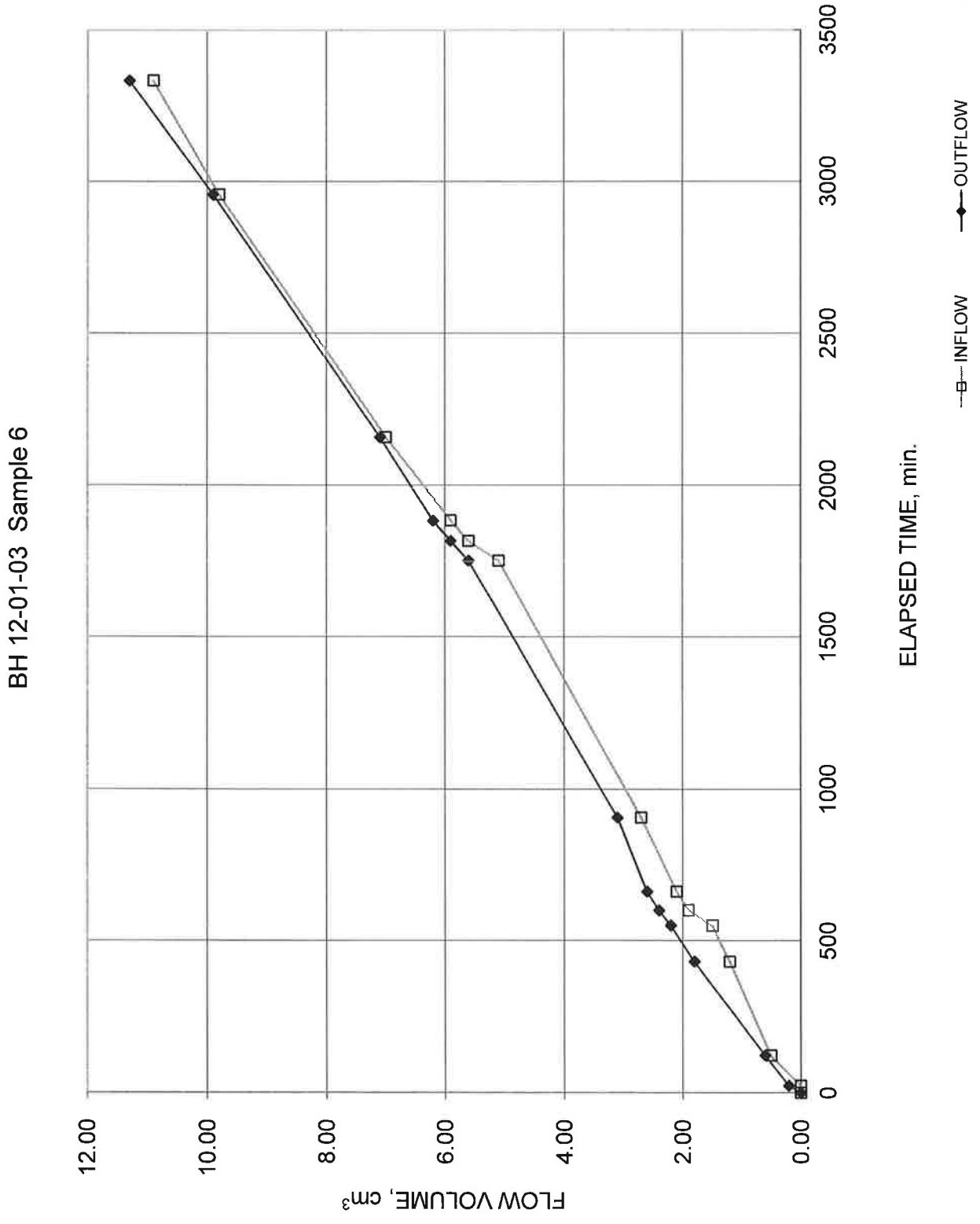
TEST RESULTS

ELAPSED TIME TO STEADY STATE FLOW (min)	0.0
DURATION OF STEADY STATE FLOW (min)	3333.0
INFLOW VOLUME UNDER STEADY STATE FLOW (cm^3)	10.9
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm^3)	11.3
HYDRAULIC CONDUCTIVITY (INFLOW) (cm/s)	7.15E-08
HYDRAULIC CONDUCTIVITY (OUTFLOW) (cm/s)	7.42E-08
HYDRAULIC CONDUCTIVITY, K, cm/s	**7.28E-08**

NOTES:

PERMEANT FLUID Deaired tap water

HYDRAULIC CONDUCTIVITY TEST



Project No: 12-1125-0045
Prepared By: RD

Golder Associates

Checked By:

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-1-3-1

INTERVAL (metres below ground surface)

Top of Interval =	**40.1**
Bottom of Interval =	**45.4**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

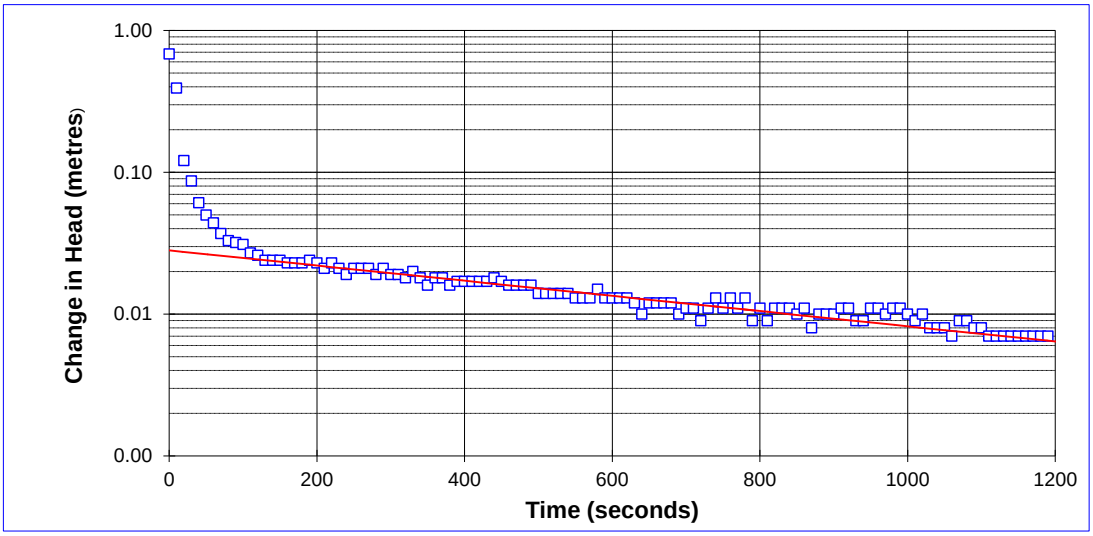
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.05**
L_e =	**5.27**
$\ln(R_e/r_w)$	**3.10**
y_0 =	**0.02**
y_t =	**0.01**
t =	**600.0**

RESULTS

K=	**2E-07**	**m/sec**
K=	**2E-05**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/14/13

Analysis By: DH
Checked By: BH
Analysis Date: 1/15/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 12-1-4A

INTERVAL (metres below ground surface)

Top of Interval =	**36.0**
Bottom of Interval =	**39.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

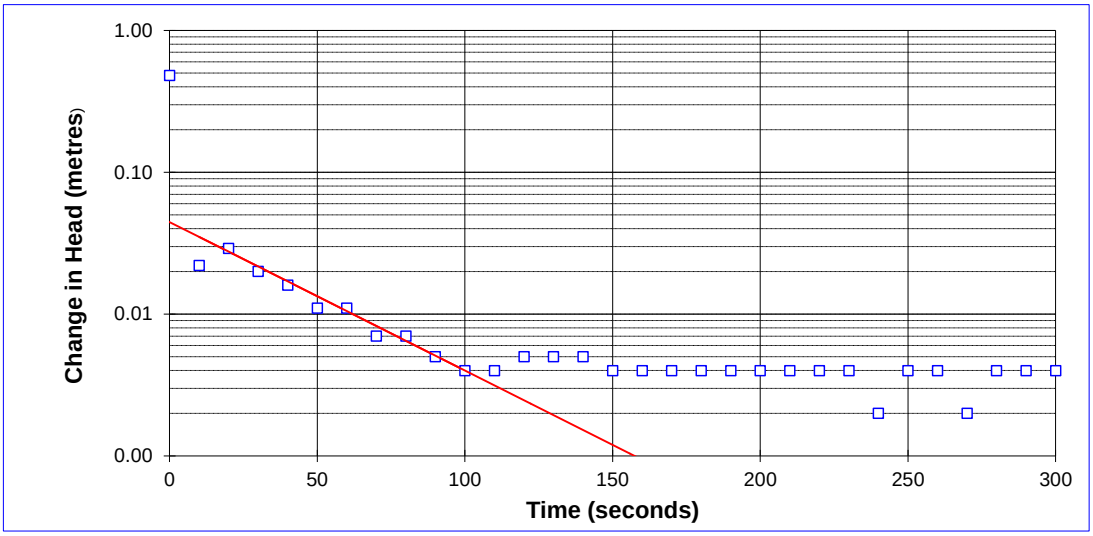
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**3.50**
$\ln(R_e/r_w)$	**2.92**
y_0 =	**0.04**
y_t =	**0.00**
t =	**90.0**

RESULTS

K=	**3E-06**	**m/sec**
K=	**3E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/14/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/15/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-1-5B

INTERVAL (metres below ground surface)

Top of Interval =	**4.8**
Bottom of Interval =	**5.0**

$$K = \frac{r_c^{\,2} \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

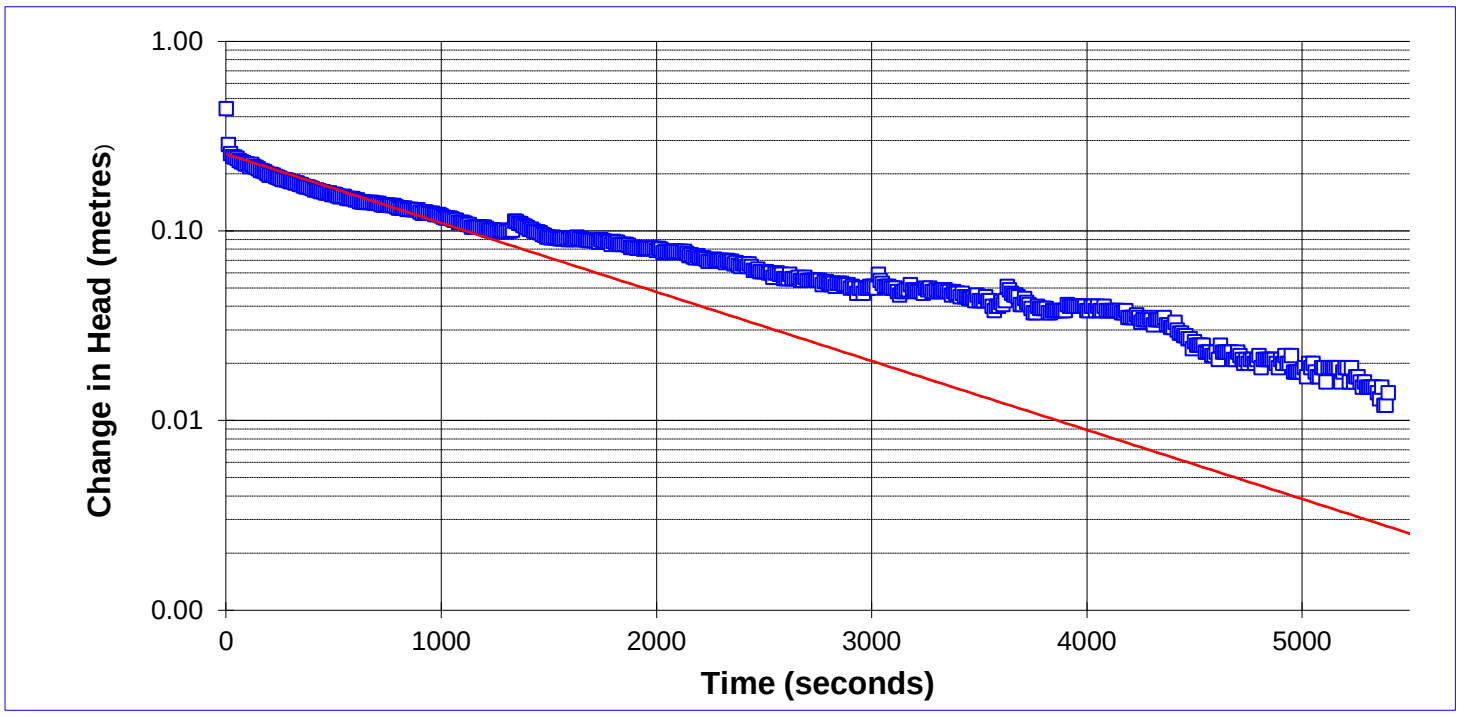
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.10**
L_e =	**0.24**
$\ln(R_e/r_w)$	**1.03**
y_0 =	**0.25**
y_t =	**0.11**
t =	**980.0**

RESULTS

K=	**5E-07**	**m/sec**
K=	**5E-05**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/14/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/15/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-1-6

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

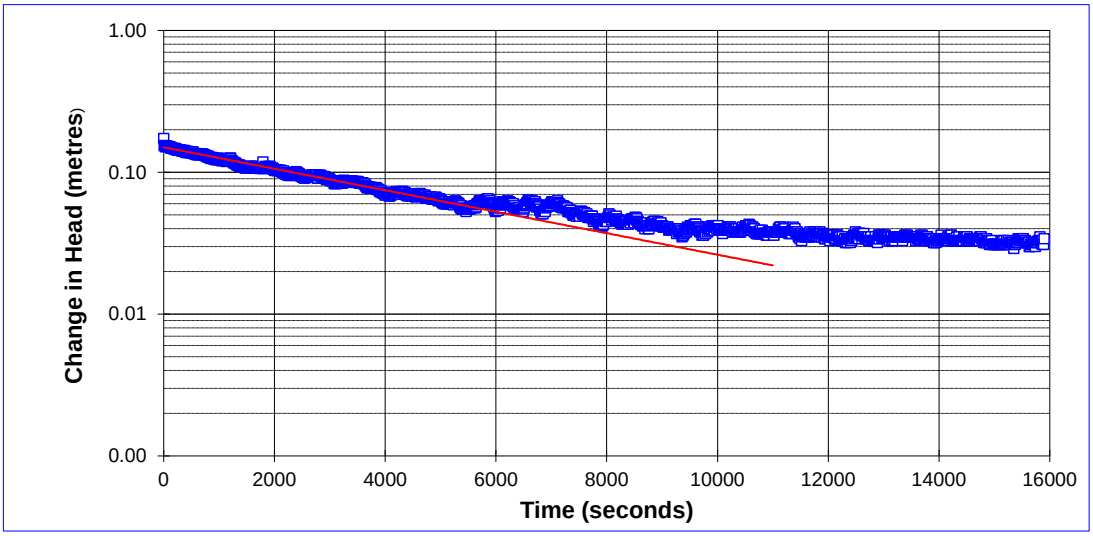
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.10**
L_e =	**1.20**
$\ln(R_e/r_w)$	**1.84**
y_0 =	**0.15**
y_t =	**0.13**
t =	**1000.0**

RESULTS

K=	**9E-08**	**m/sec**
K=	**9E-06**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/14/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/15/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-2-3

INTERVAL (metres below ground surface)

Top of Interval =	**37.0**
Bottom of Interval =	**42.0**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

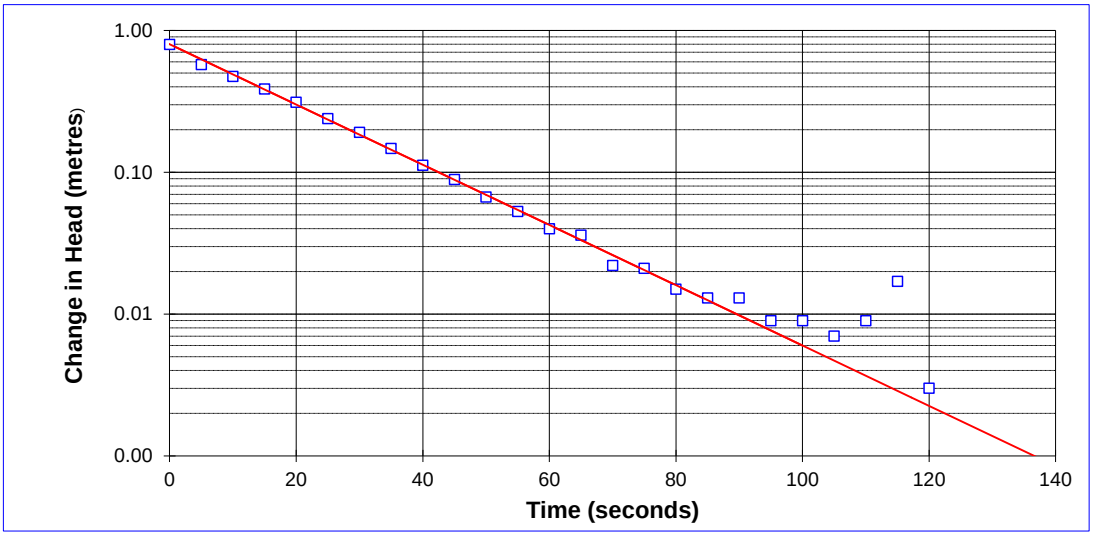
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.05**
L_e =	**4.95**
$\ln(R_e/r_w)$	**3.05**
y_0 =	**0.80**
y_t =	**0.01**
t =	**100.0**

RESULTS

K=	**2E-05**	**m/sec**
K=	**2E-03**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/22/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/22/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST BH12-2-5B

INTERVAL (metres below ground surface)

Top of Interval =	**6.3**
Bottom of Interval =	**6.6**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

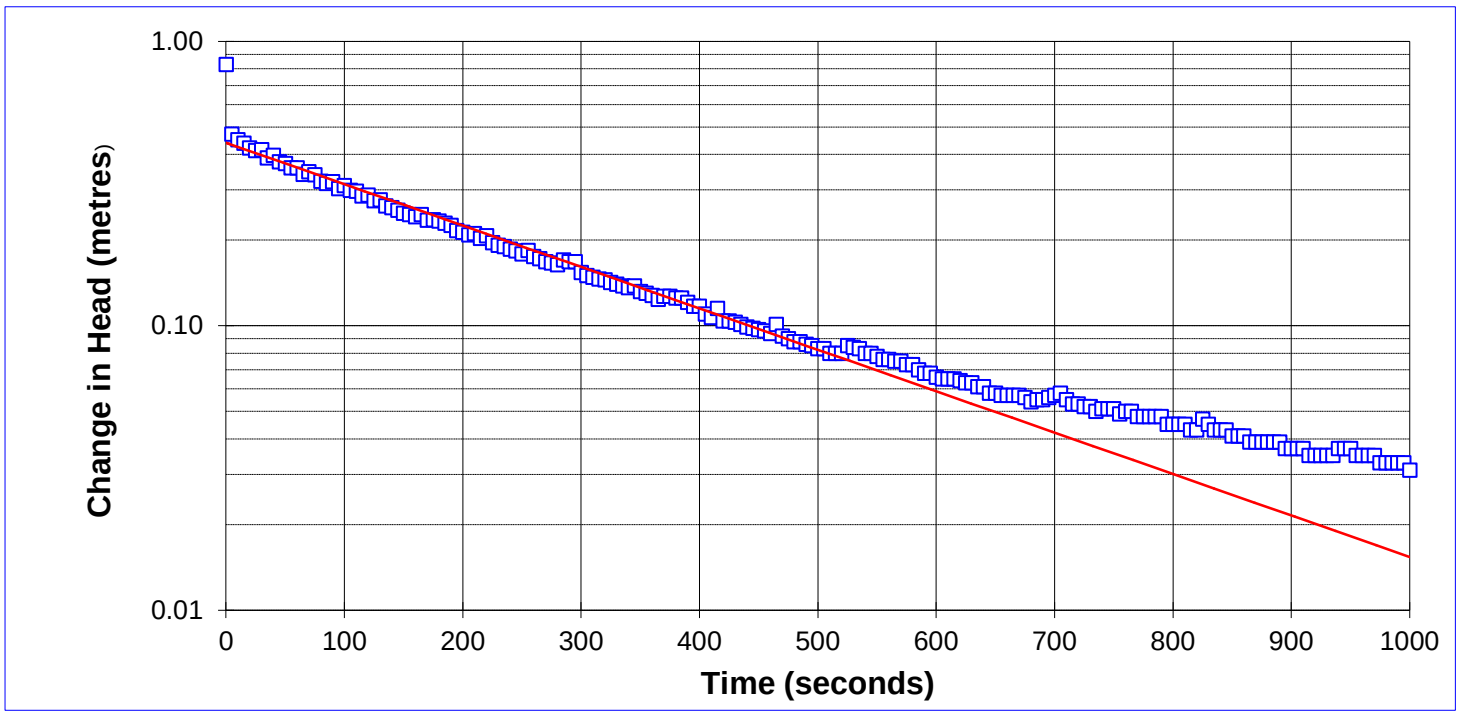
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**0.30**
$\ln(R_e/r_w)$	**1.13**
y_0 =	**0.44**
y_t =	**0.23**
t =	**200.0**

RESULTS

K=	**2E-06**	**m/sec**
K=	**2E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/22/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/22/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-2-6

INTERVAL (metres below ground surface)

Top of Interval =	**0.4**
Bottom of Interval =	**2.3**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

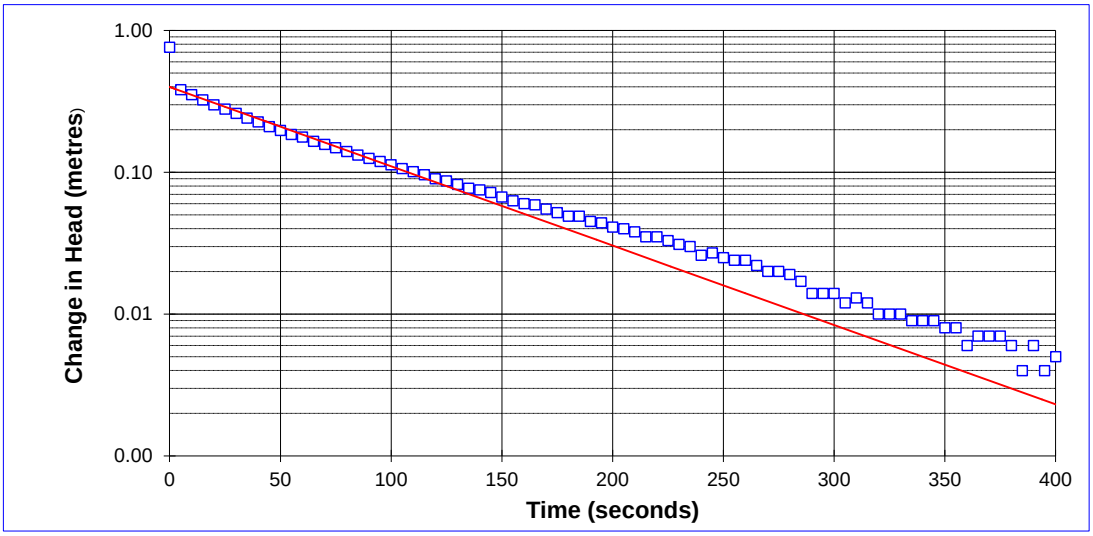
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.06**
r_w =	**0.10**
L_e =	**1.81**
$\ln(R_e/r_w)$	**1.78**
y_0 =	**0.40**
y_t =	**0.21**
t =	**50.0**

RESULTS

K=	**2E-05**	**m/sec**
K=	**2E-03**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/22/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/22/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 12-3-3

INTERVAL (metres below ground surface)

Top of Interval =	**40.1**
Bottom of Interval =	**45.4**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

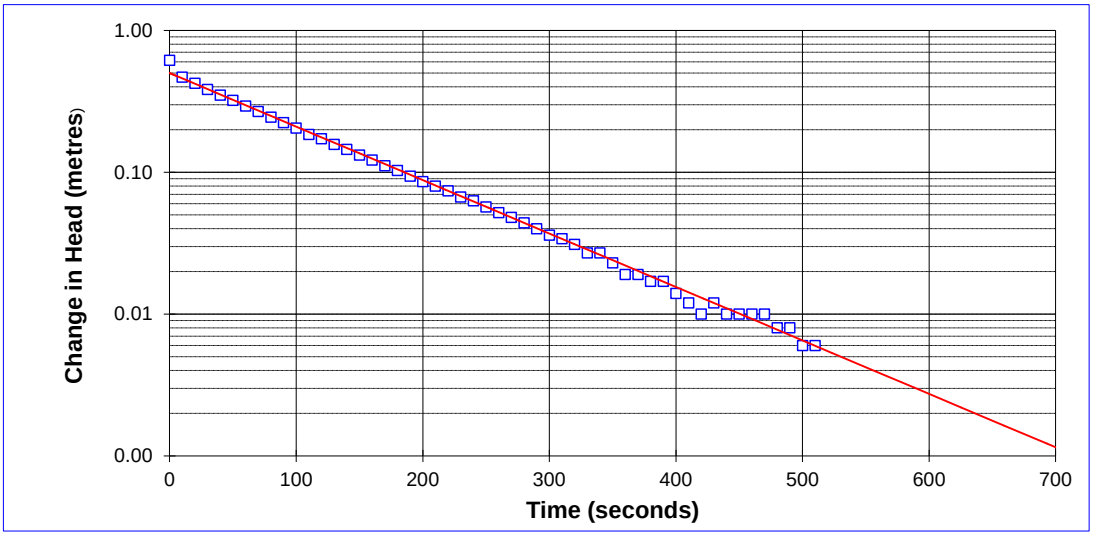
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.05**
L_e =	**5.30**
$\ln(R_e/r_w)$	**3.08**
y_0 =	**0.50**
y_t =	**0.04**
t =	**300.0**

RESULTS

K=	**3E-06**	**m/sec**
K=	**3E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/14/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/15/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-3-4A

INTERVAL (metres below ground surface)

Top of Interval =	**35.1**
Bottom of Interval =	**38.7**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

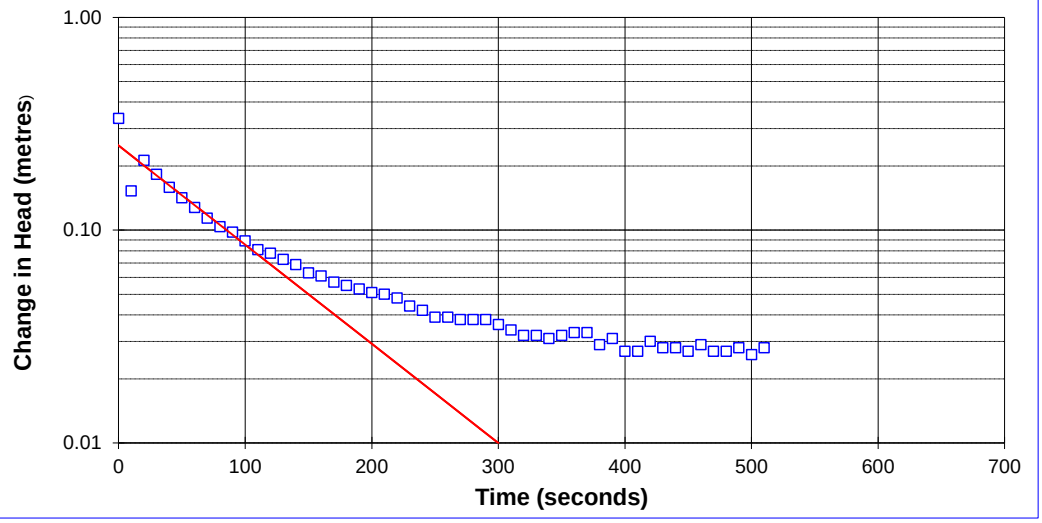
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**3.60**
$\ln(R_e/r_w)$	**3.39**
y_0 =	**0.25**
y_t =	**0.01**
t =	**300.0**

RESULTS

K=	**2E-06**	**m/sec**
K=	**2E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/14/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/16/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 12-3-5B

INTERVAL (metres below ground surface)

Top of Interval =	**4.6**
Bottom of Interval =	**4.9**

$$K = \frac{r_c^{\,2} \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

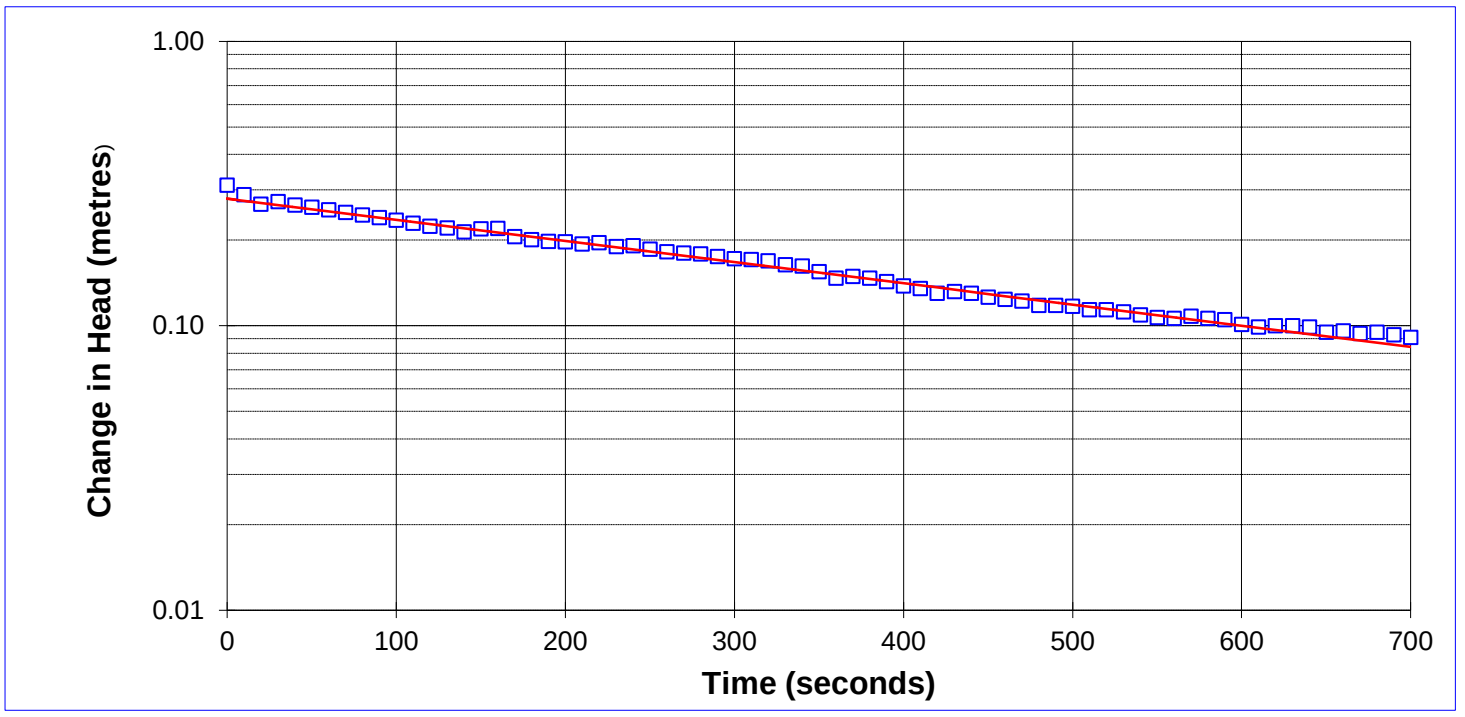
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.10**
L_e =	**0.30**
$\ln(R_e/r_w)$	**1.00**
y_0 =	**0.28**
y_t =	**0.10**
t =	**600.0**

RESULTS

K=	**7E-07**	**m/sec**
K=	**7E-05**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/14/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/15/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-3-6

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

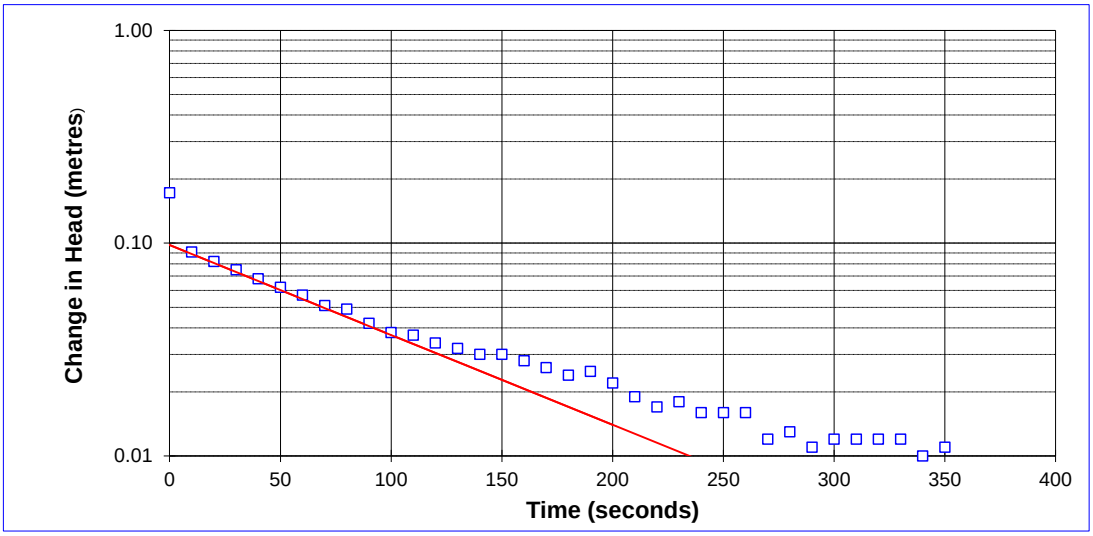
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.10**
L_e =	**1.20**
$\ln(R_e/r_w)$	**1.87**
y_0 =	**0.10**
y_t =	**0.01**
t =	**200.0**

RESULTS

K=	**5E-06**	**m/sec**
K=	**5E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1125-0045
Test Date: 01/14/13

Analysis By: DH
Checked By: CHM
Analysis Date: 1/15/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-4-3

INTERVAL (metres below ground surface)

Top of Interval =	**38.5**
Bottom of Interval =	**43.6**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

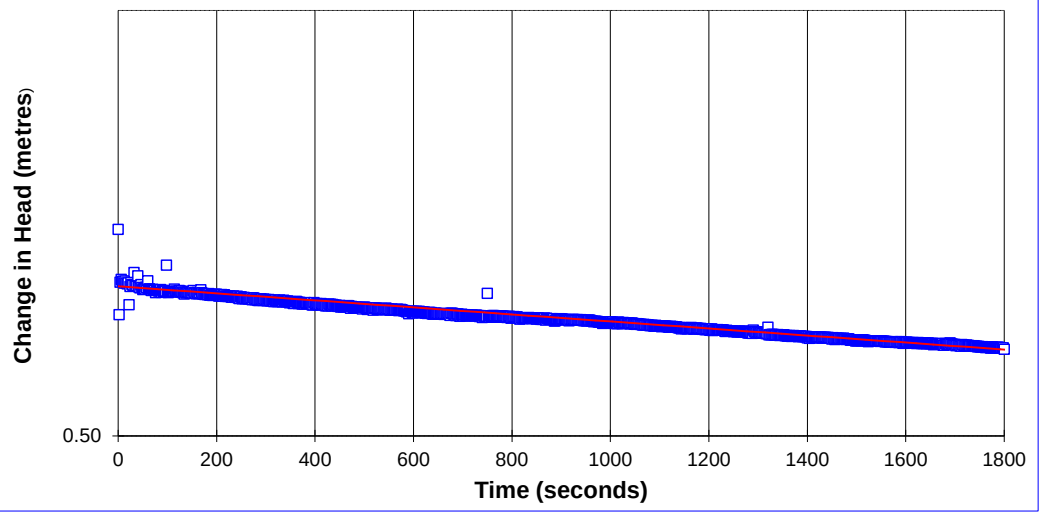
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.05**
L_e =	**5.10**
$\ln(R_e/r_w)$	**4.13**
y_0 =	**0.64**
y_t =	**0.62**
t =	**500.0**

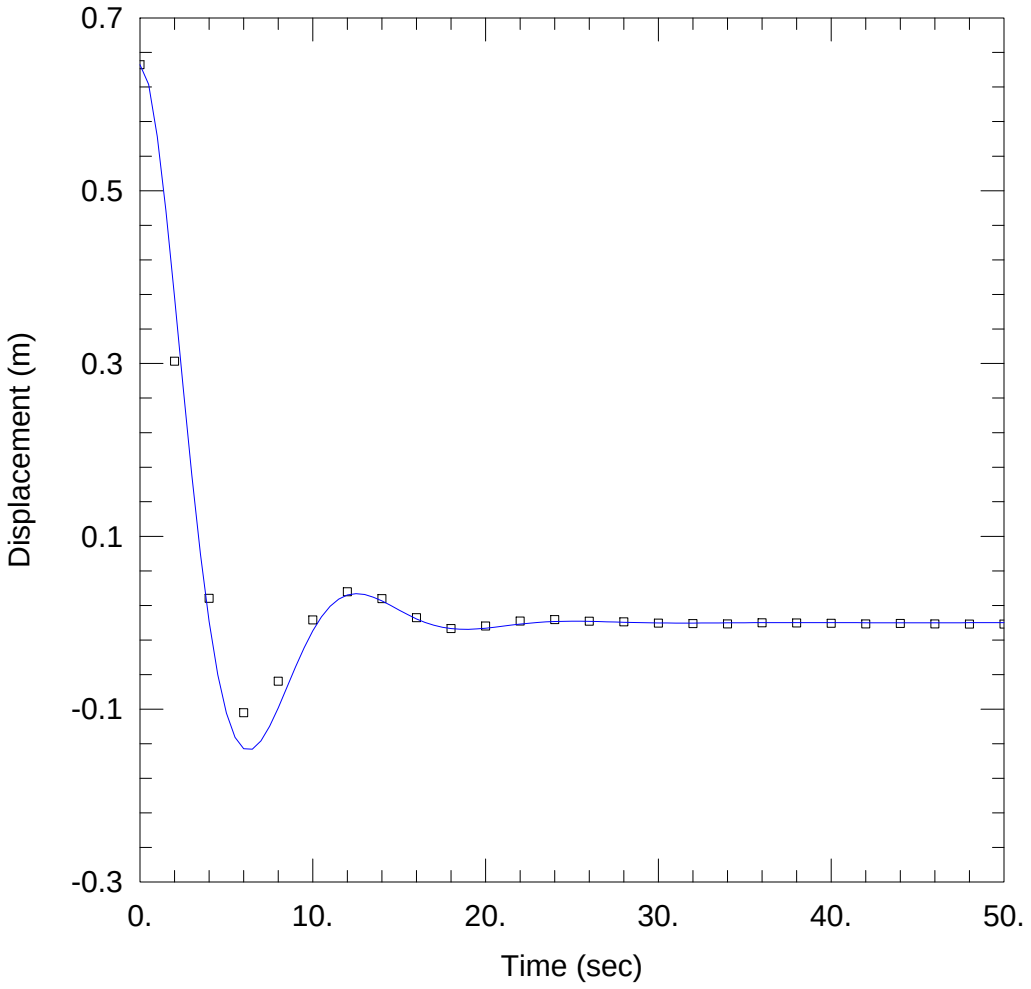
RESULTS

K=	**2E-08**	**m/sec**
K=	**2E-06**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/18/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/2/2013



WELL TEST ANALYSIS

Data Set: \...\BH12-4-4A RHT-1_BH.aqt
Date: 12/05/13 Time: 16:41:56

PROJECT INFORMATION

Company: Golder Associate Ltd.
Client: CRRRC/Eastern EA ON/Boundary R
Project: 12-1125-0045/1000/0120
Test Well: 12-4-4A
Test Date: 4/18/2013

AQUIFER DATA

Saturated Thickness: 4.36 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (12-4-4A)

Initial Displacement: 0.6458 m
Total Well Penetration Depth: 2.89 m
Casing Radius: 0.016 m
Static Water Column Height: 35.28 m
Screen Length: 1.85 m
Well Radius: 0.05 m

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 0.0001774 m/sec
Le = 31.97 m

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 12-4-5B

INTERVAL (metres below ground surface)

Top of Interval =	**4.7**
Bottom of Interval =	**5.0**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

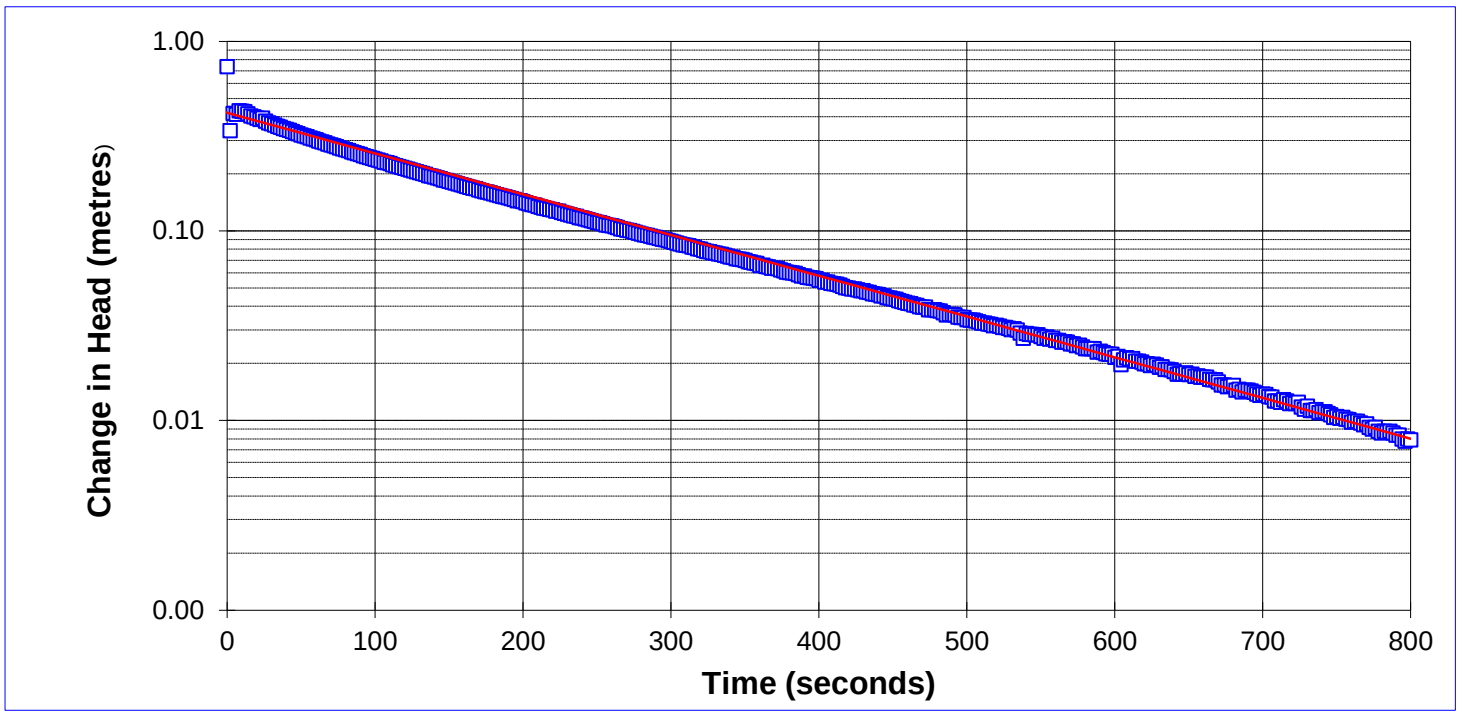
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**0.23**
$\ln(R_e/r_w)$	**1.06**
y_0 =	**0.42**
y_t =	**0.06**
t =	**400.0**

RESULTS

K=	**3E-06**	**m/sec**
K=	**3E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/18/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/2/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 12-4-6

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.6**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

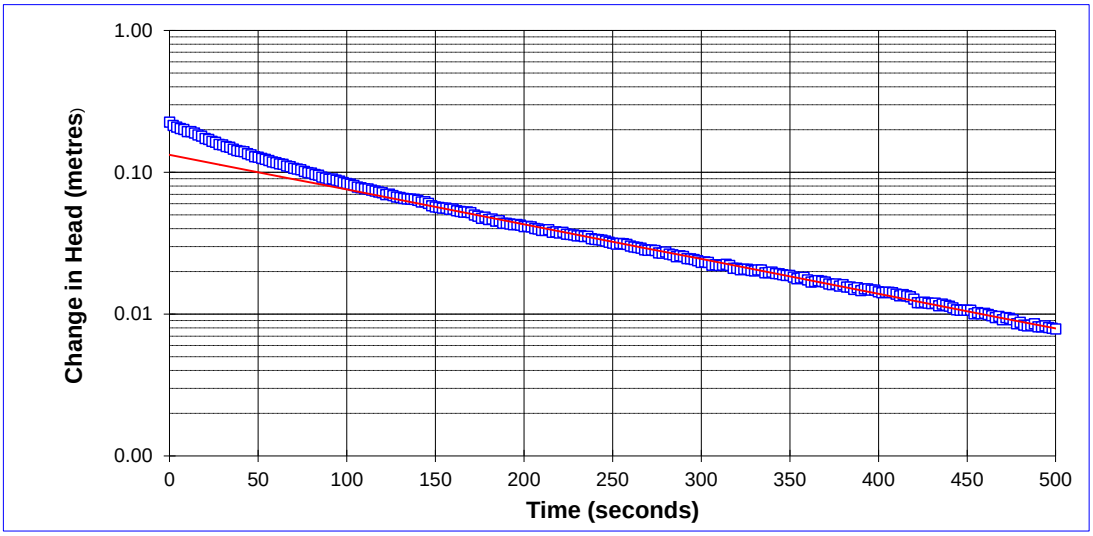
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.06**
L_e =	**1.30**
$\ln(R_e/r_w)$	**2.05**
y_0 =	**0.06**
y_t =	**0.01**
t =	**300.0**

RESULTS

K=	**3E-06**	**m/sec**
K=	**3E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/24/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-10-2

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

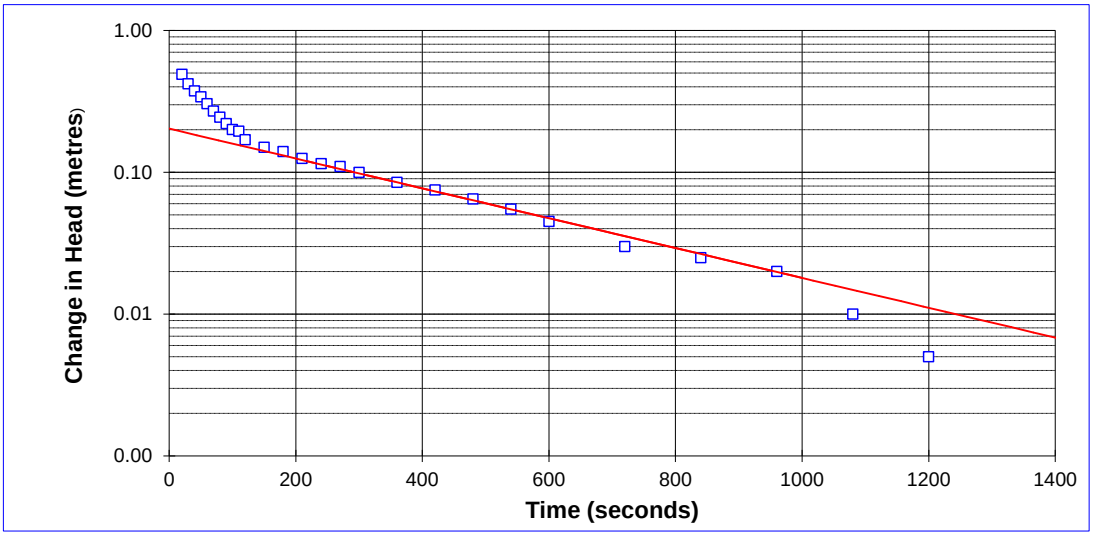
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.06**
L_e =	**1.13**
$\ln(R_e/r_w)$	**1.92**
y_0 =	**0.13**
y_t =	**0.02**
t =	**800.0**

RESULTS

K=	**2E-06**	**m/sec**
K=	**2E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/22/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/6/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-10-3

INTERVAL (metres below ground surface)

Top of Interval =	**5.87**
Bottom of Interval =	**6.15**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

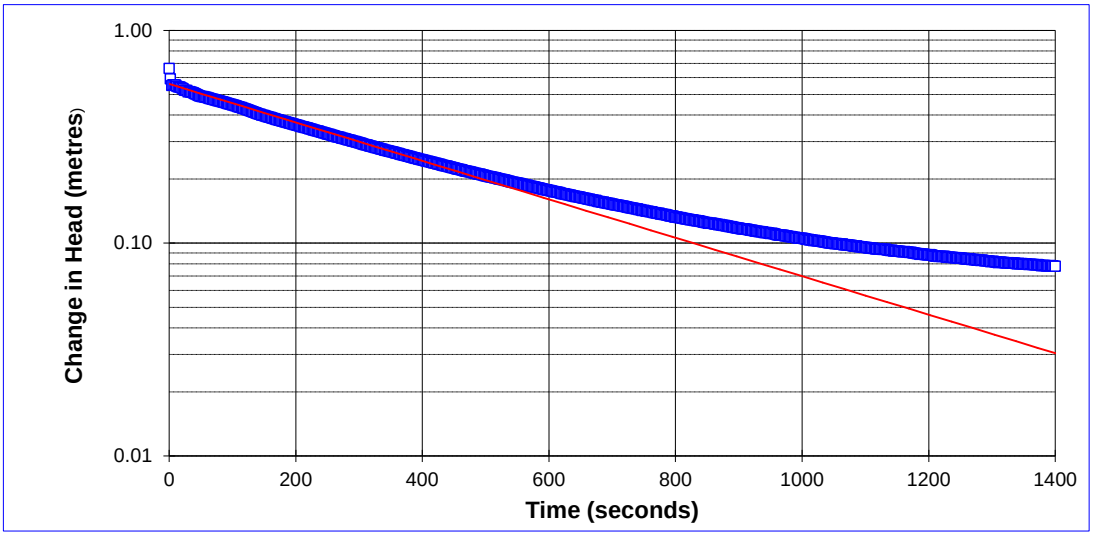
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**0.28**
$\ln(R_e/r_w)$	**1.15**
y_0 =	**0.56**
y_t =	**0.30**
t =	**300.0**

RESULTS

K=	**1E-06**	**m/sec**
K=	**1E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/18/13

Analysis By: DH
Checked By: BH
Analysis Date: 7/23/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-12-2

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

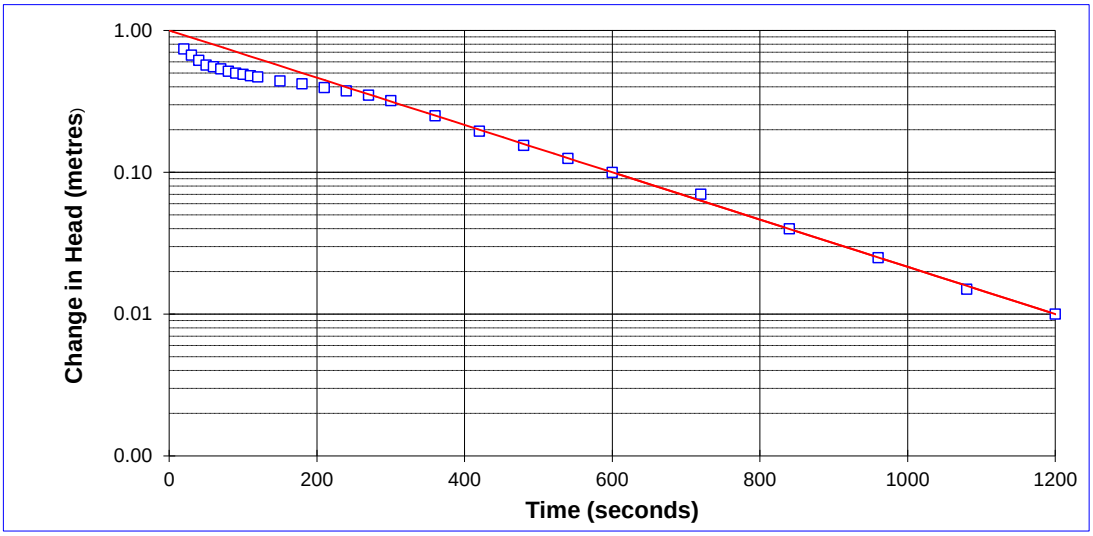
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.06**
L_e =	**1.22**
$\ln(R_e/r_w)$	**2.43**
y_0 =	**0.10**
y_t =	**0.01**
t =	**600.0**

RESULTS

K=	**4E-06**	**m/sec**
K=	**4E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/24/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/6/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-12-3

INTERVAL (metres below ground surface)

Top of Interval =	**4.8**
Bottom of Interval =	**5.4**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

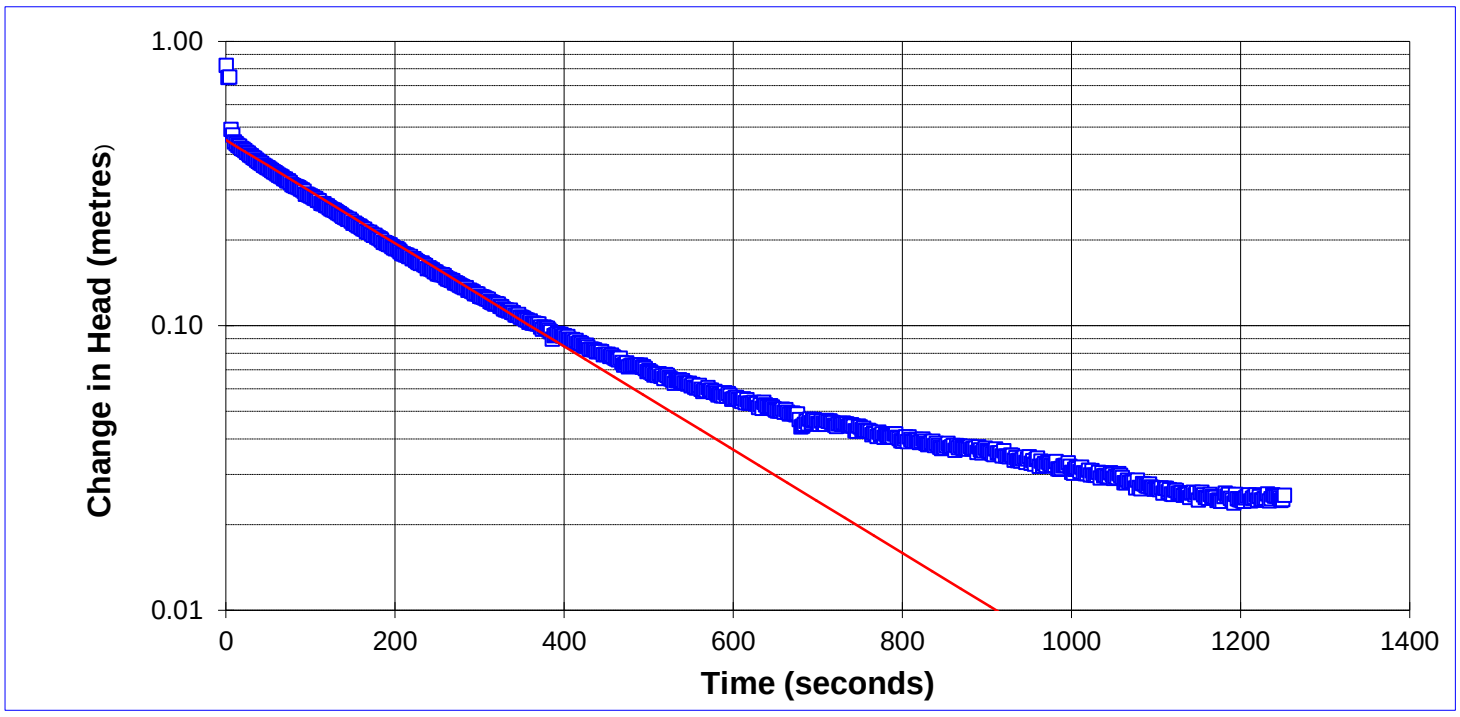
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**0.61**
$\ln(R_e/r_w)$	**1.71**
y_0 =	**0.45**
y_t =	**0.20**
t =	**200.0**

RESULTS

K=	**1E-06**	**m/sec**
K=	**1E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/18/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/9/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-17-2

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

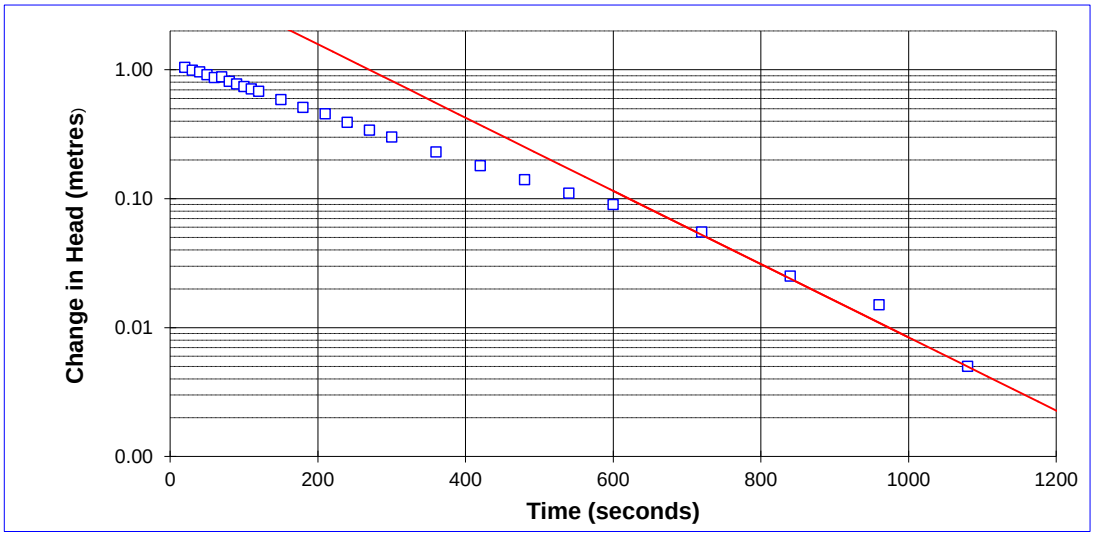
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**1.22**
$\ln(R_e/r_w)$	**2.16**
y_0 =	**0.12**
y_t =	**0.01**
t =	**400.0**

RESULTS

K=	**1E-06**	**m/sec**
K=	**1E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/24/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-17-3

INTERVAL (metres below ground surface)

Top of Interval =	**4.4**
Bottom of Interval =	**5.0**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

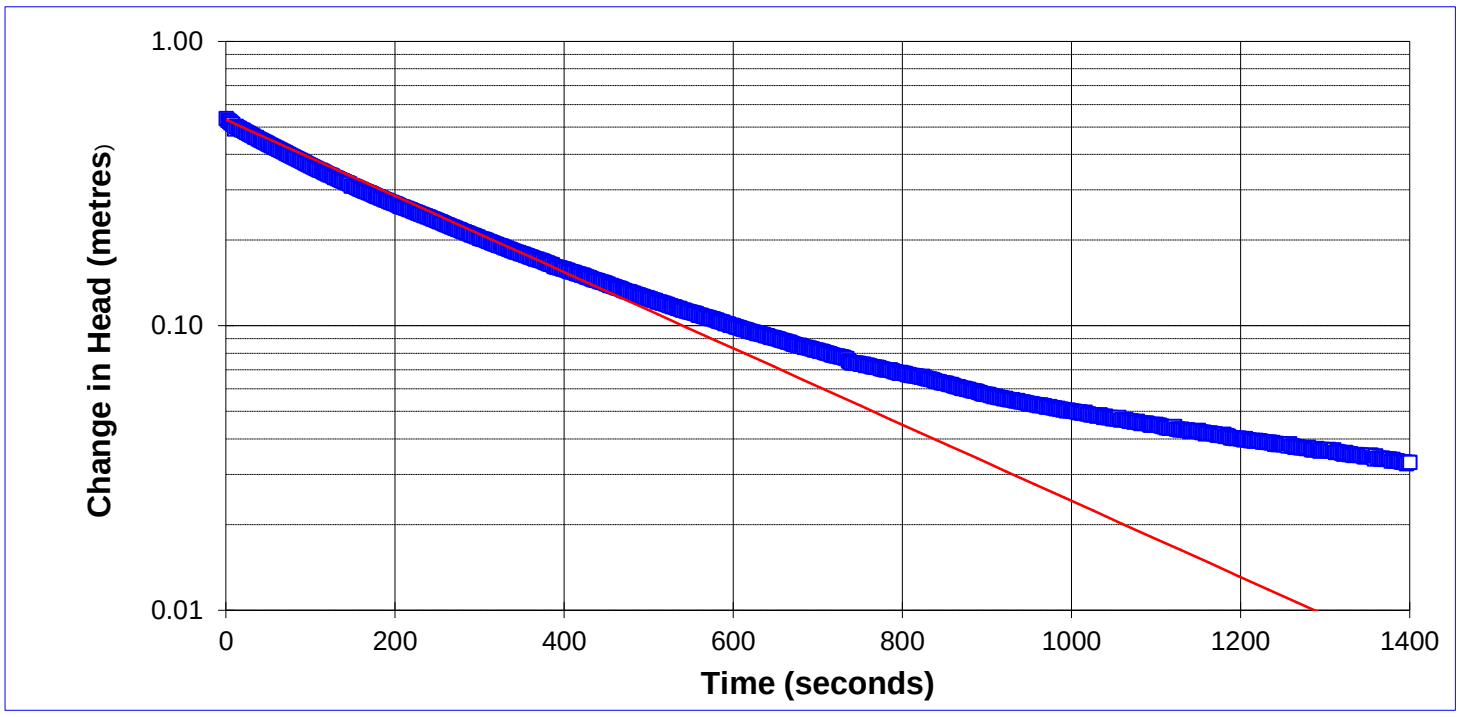
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**0.58**
$\ln(R_e/r_w)$	**1.67**
y_0 =	**0.53**
y_t =	**0.21**
t =	**300.0**

RESULTS

K=	**1E-06**	**m/sec**
K=	**1E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/17/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/2/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-18-2

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

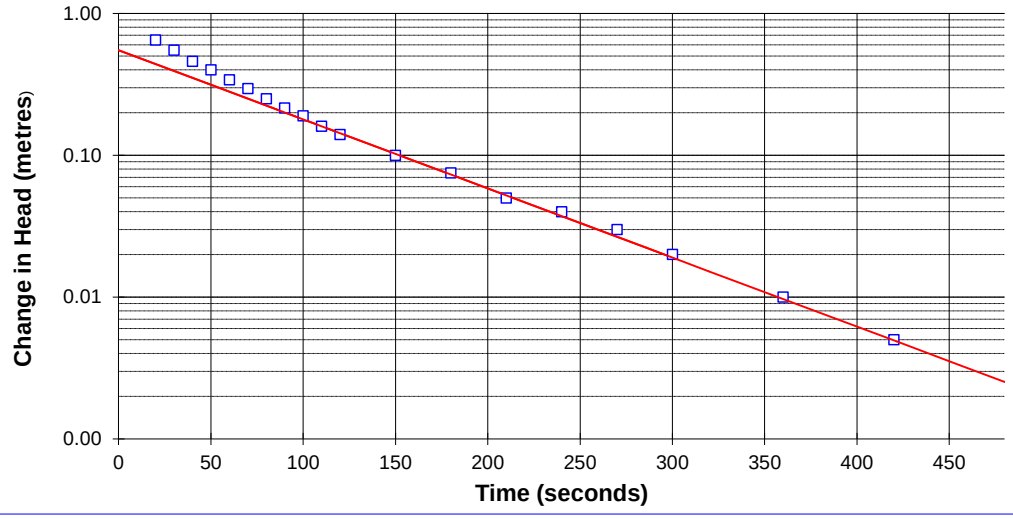
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.06**
L_e =	**1.22**
$\ln(R_e/r_w)$	**2.16**
y_0 =	**0.55**
y_t =	**0.02**
t =	**300.0**

RESULTS

K=	**1E-05**	**m/sec**
K=	**1E-03**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/22/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/6/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-18-3

INTERVAL (metres below ground surface)

Top of Interval =	**5.7**
Bottom of Interval =	**6.2**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

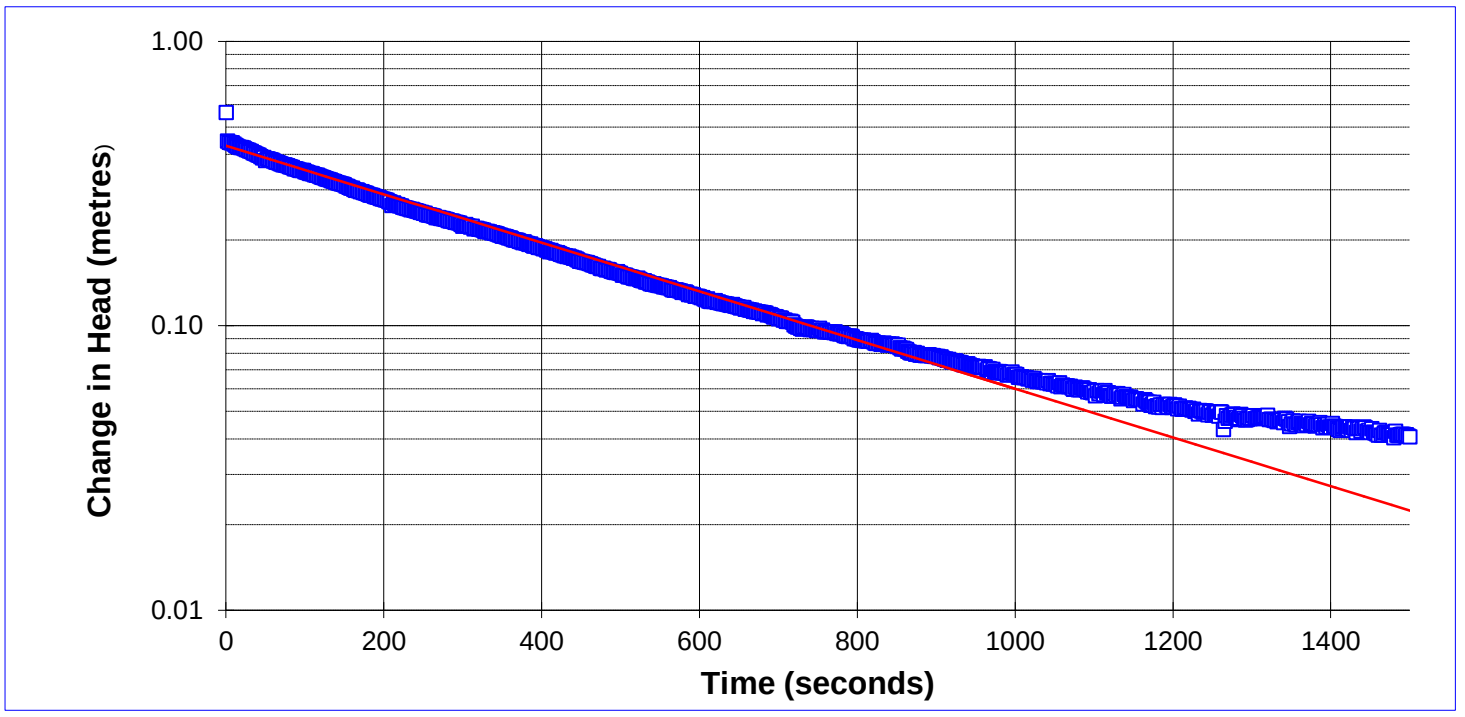
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**0.43**
$\ln(R_e/r_w)$	**1.43**
y_0 =	**0.43**
y_t =	**0.06**
t =	**1000.0**

RESULTS

K=	**8E-07**	**m/sec**
K=	**8E-05**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/22/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/6/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-21-2

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

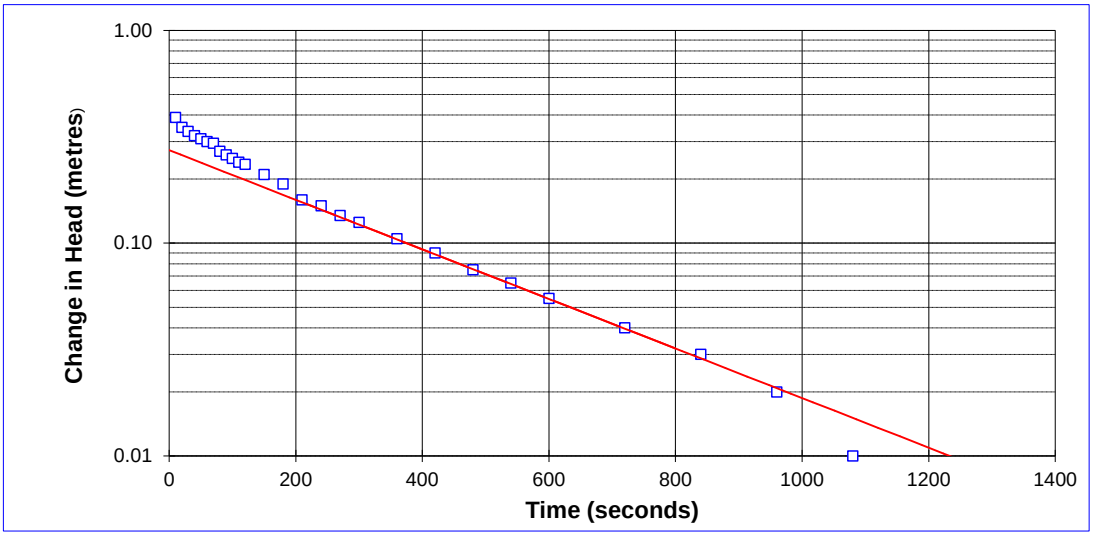
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.06**
L_e =	**0.94**
$\ln(R_e/r_w)$	**1.77**
y_0 =	**0.16**
y_t =	**0.03**
t =	**600.0**

RESULTS

K=	**3E-06**	**m/sec**
K=	**3E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/22/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/3/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-24-2

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

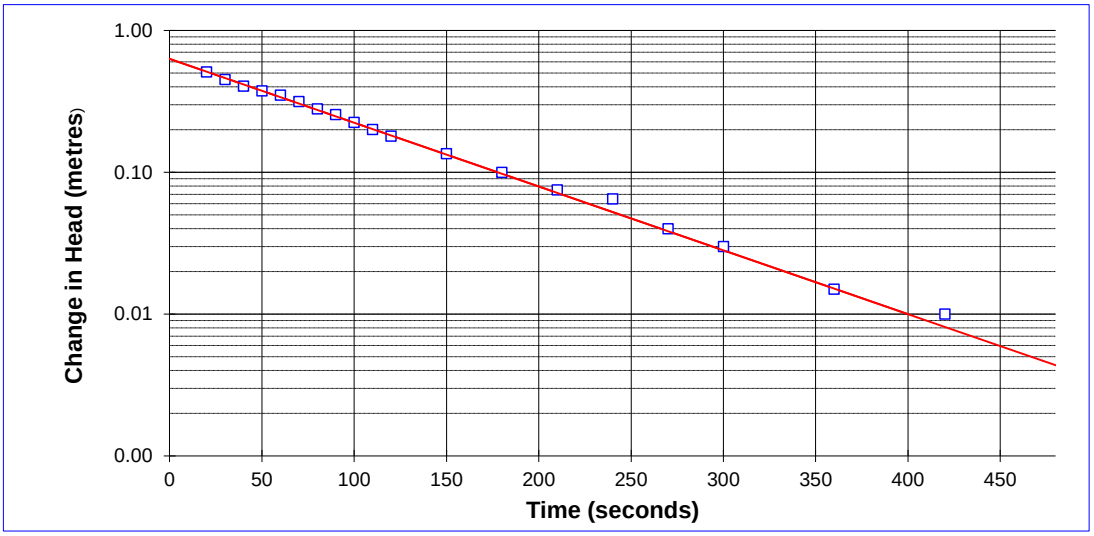
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**1.22**
$\ln(R_e/r_w)$	**2.14**
y_0 =	**0.63**
y_t =	**0.01**
t =	**400.0**

RESULTS

K=	**2E-06**	**m/sec**
K=	**2E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/22/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/6/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-5-3

INTERVAL (metres below ground surface)

Top of Interval =	**35.3**
Bottom of Interval =	**40.3**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

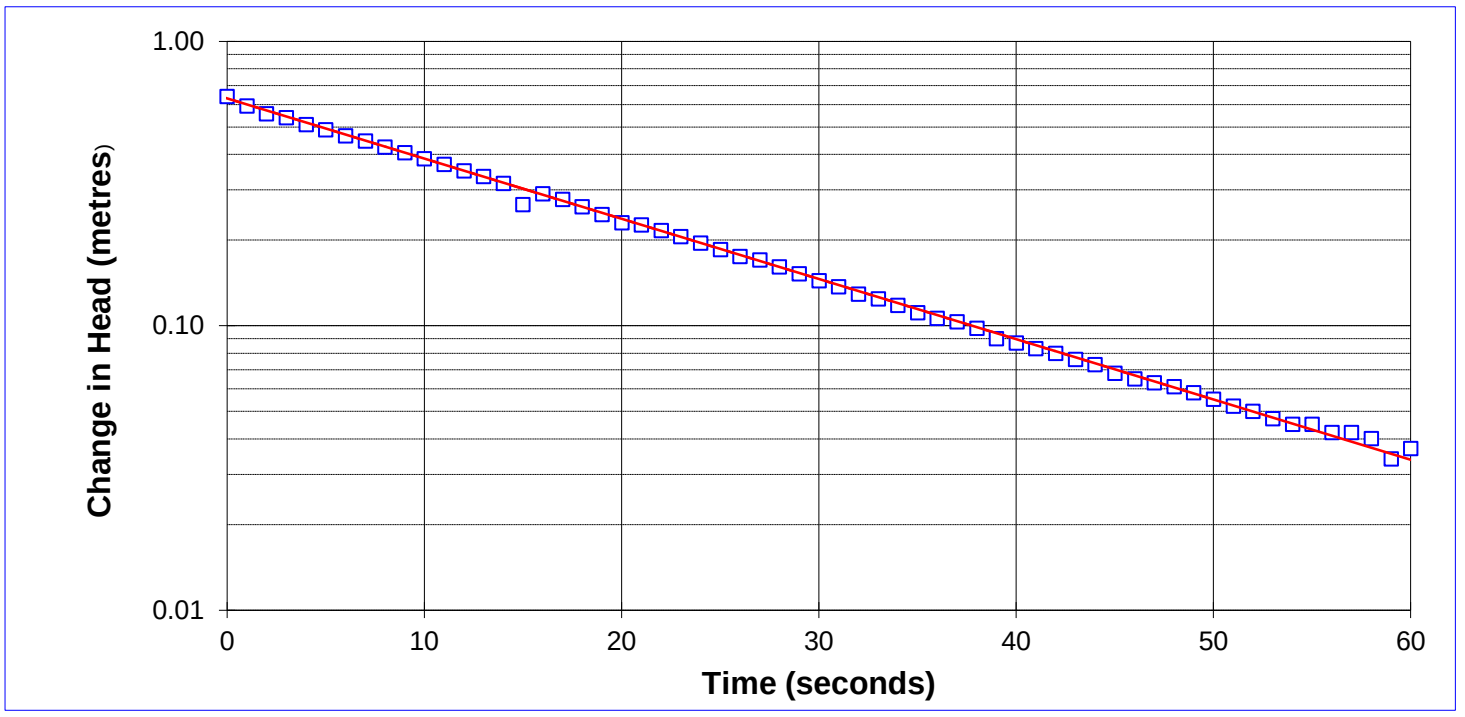
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.04**
L_e =	**5.08**
$\ln(R_e/r_w)$	**4.24**
y_0 =	**0.63**
y_t =	**0.06**
t =	**50.0**

RESULTS

K=	**5E-06**	**m/sec**
K=	**5E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 07/09/13

Analysis By: DH
Checked By: BH
Analysis Date: 7/12/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-5-4A

INTERVAL (metres below ground surface)

Top of Interval =	**28.7**
Bottom of Interval =	**31.1**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

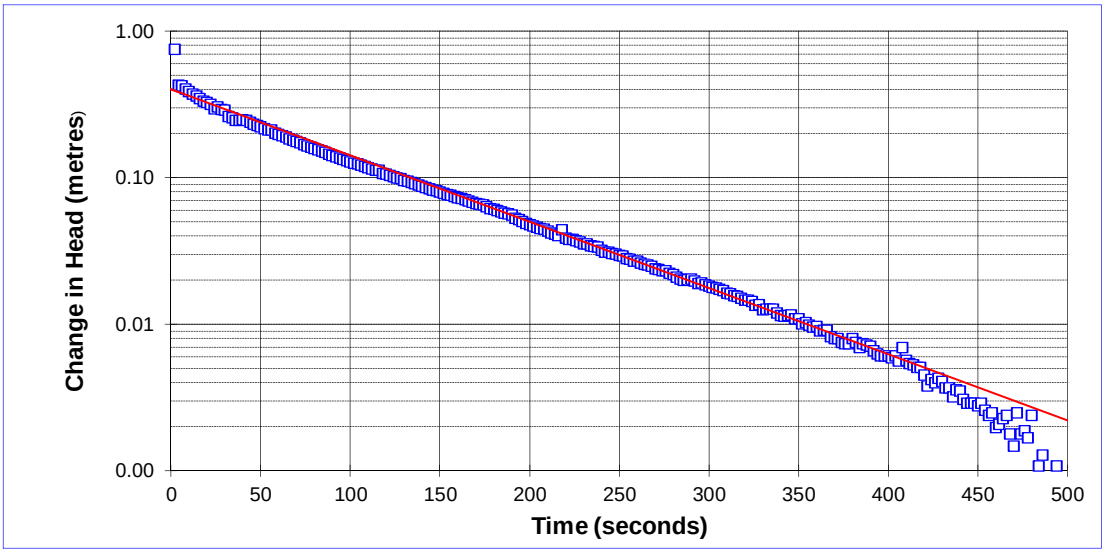
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**2.44**
$\ln(R_e/r_w)$	**2.65**
y_0 =	**0.40**
y_t =	**0.05**
t =	**200.0**

RESULTS

K=	**2E-06**	**m/sec**
K=	**2E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/25/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-5-5

INTERVAL (metres below ground surface)

Top of Interval =	**4.3**
Bottom of Interval =	**4.9**

$$K = \frac{r_c^{\,2} \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

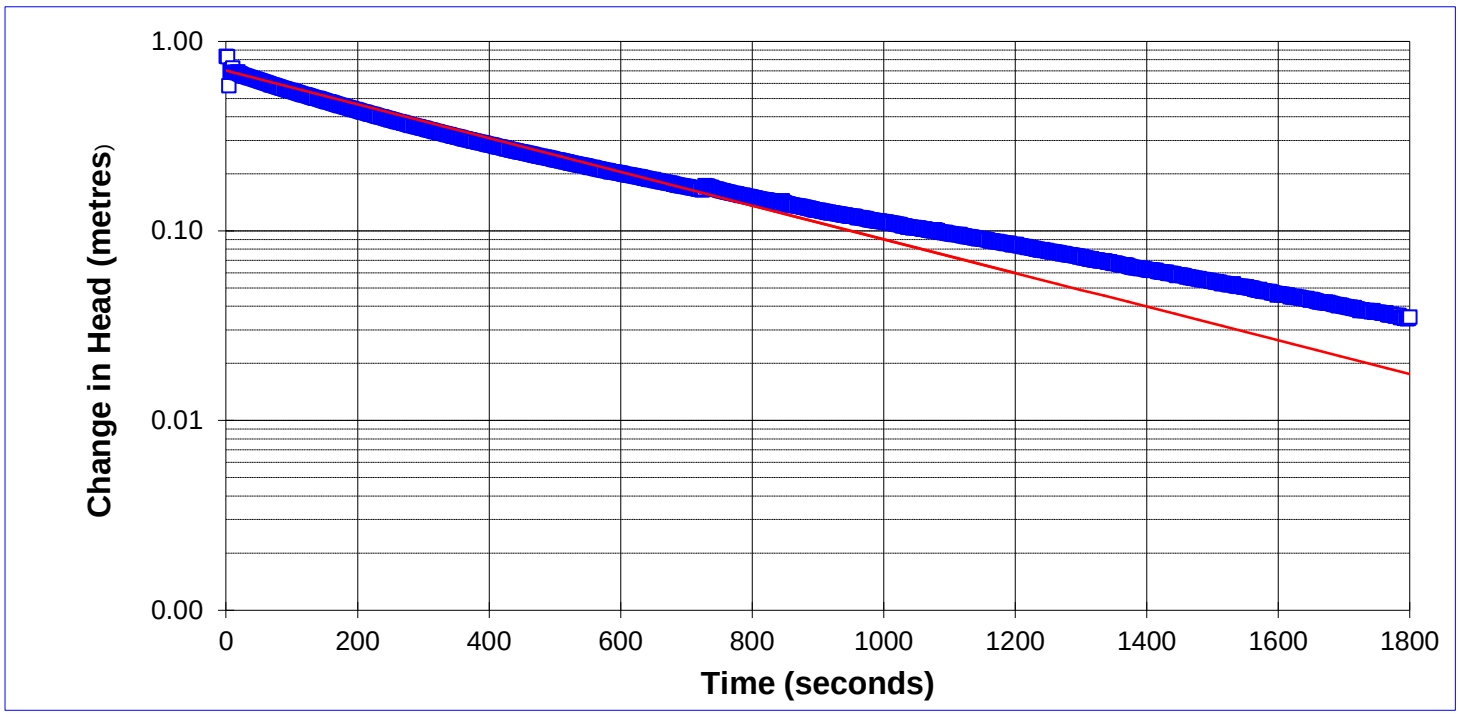
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.10**
L_e =	**0.60**
$\ln(R_e/r_w)$	**1.23**
y_0 =	**0.70**
y_t =	**0.06**
t =	**1200.0**

RESULTS

K=	**1E-06**	**m/sec**
K=	**1E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/24/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-5-6

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

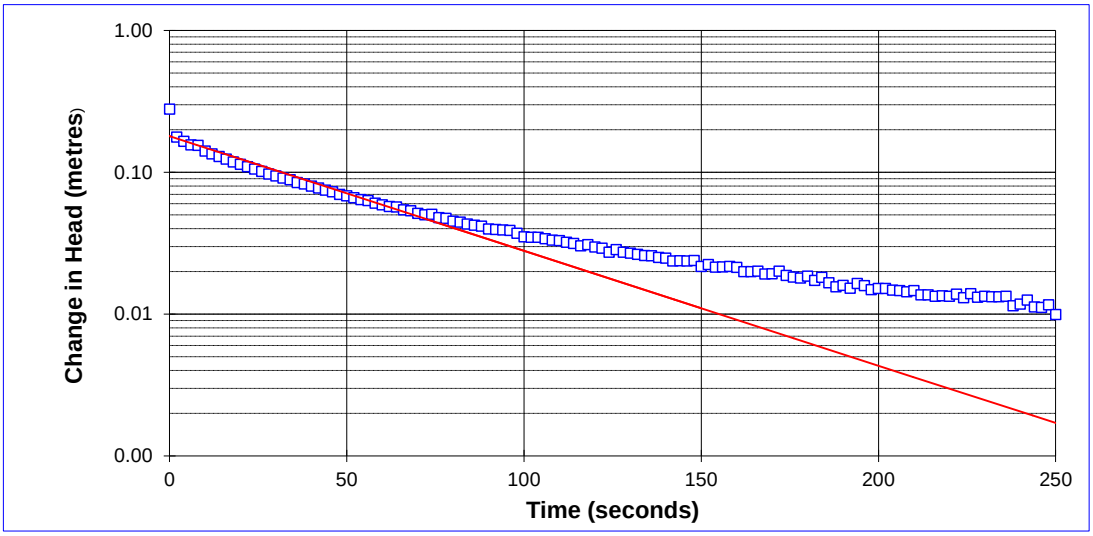
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.10**
L_e =	**1.22**
$\ln(R_e/r_w)$	**1.81**
y_0 =	**0.18**
y_t =	**0.01**
t =	**150.0**

RESULTS

K=	**9E-06**	**m/sec**
K=	**9E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/25/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-6-3

INTERVAL (metres below ground surface)

Top of Interval =	**41.4**
Bottom of Interval =	**44.7**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

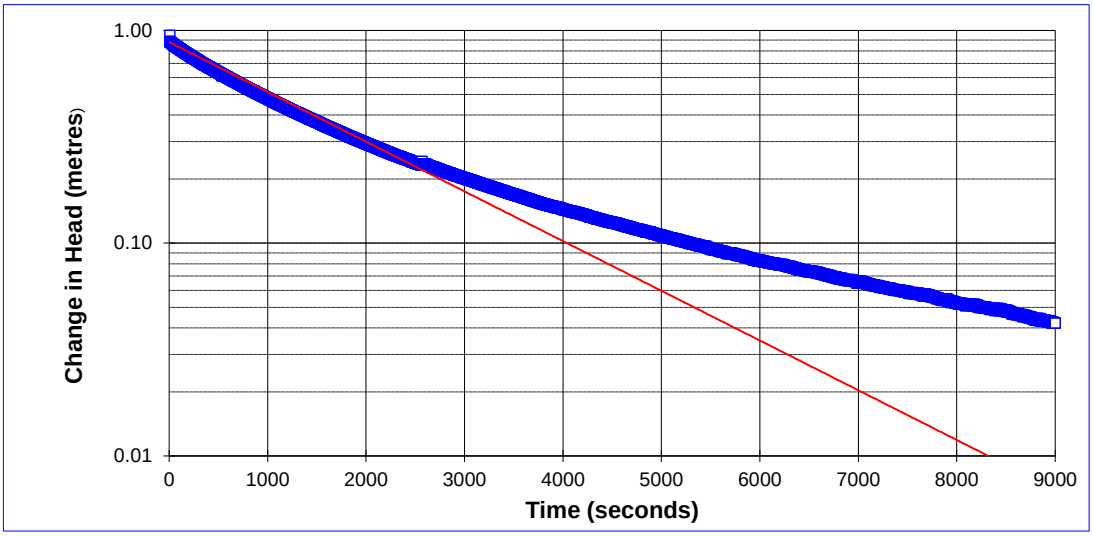
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.05**
L_e =	**3.34**
$\ln(R_e/r_w)$	**3.15**
y_0 =	**0.88**
y_t =	**0.30**
t =	**2000.0**

RESULTS

K=	**2E-07**	**m/sec**
K=	**2E-05**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/22/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/3/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-6-4A

INTERVAL (metres below ground surface)

Top of Interval =	**33.0**
Bottom of Interval =	**35.6**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

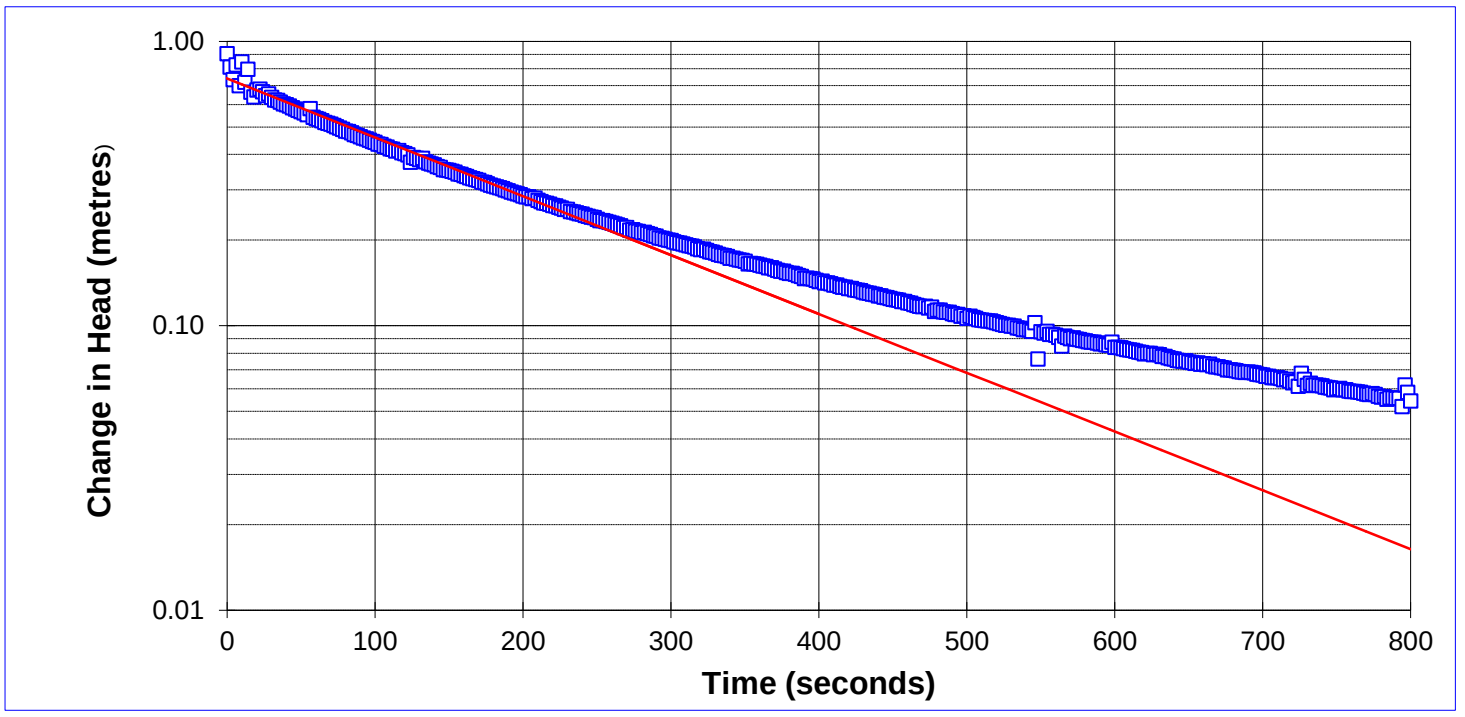
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**2.58**
$\ln(R_e/r_w)$	**2.69**
y_0 =	**0.74**
y_t =	**0.11**
t =	**400.0**

RESULTS

K=	**6E-07**	**m/sec**
K=	**6E-05**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/17/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/3/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-6-5B

INTERVAL (metres below ground surface)

Top of Interval =	**5.2**
Bottom of Interval =	**5.6**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

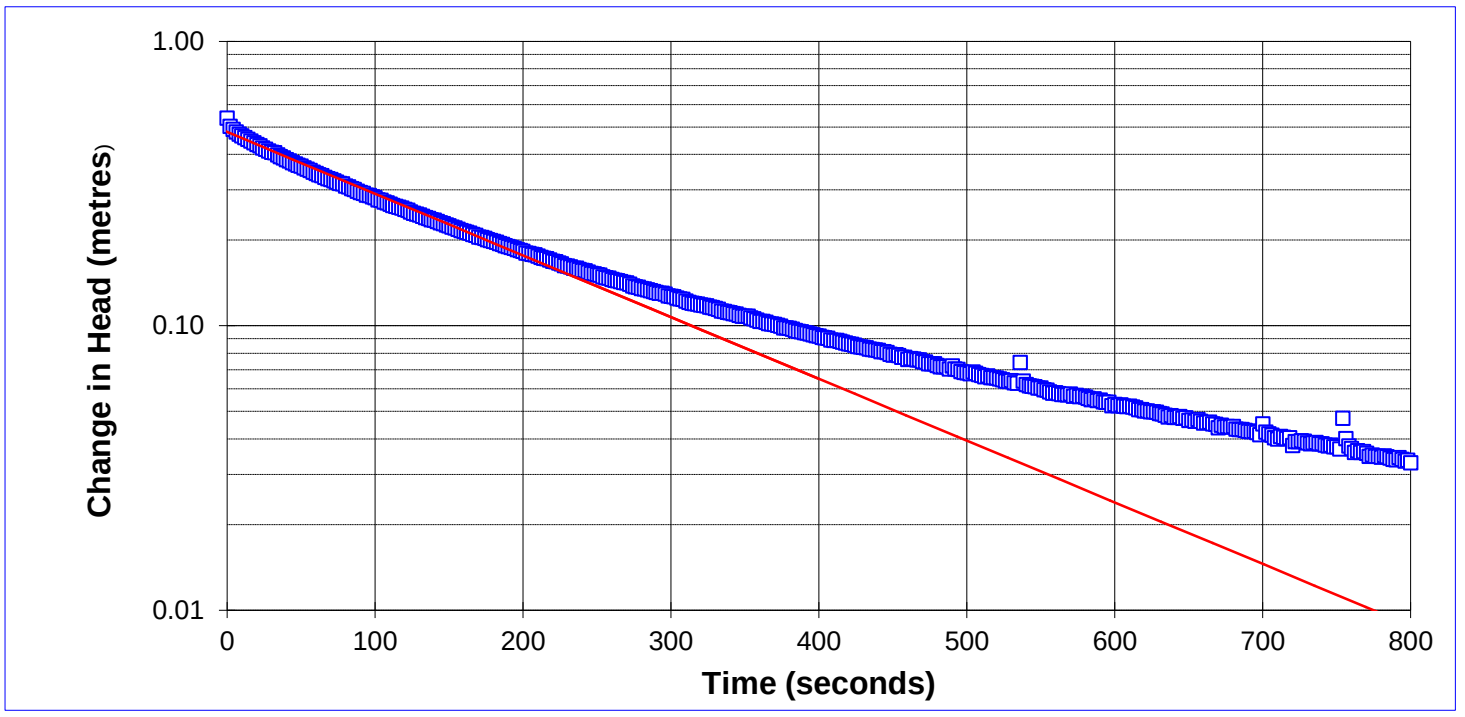
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**0.38**
$\ln(R_e/r_w)$	**1.34**
y_0 =	**0.48**
y_t =	**0.07**
t =	**400.0**

RESULTS

K=	**2E-06**	**m/sec**
K=	**2E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/17/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/3/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-6-6

INTERVAL (metres below ground surface)

Top of Interval =	**0.6**
Bottom of Interval =	**1.6**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

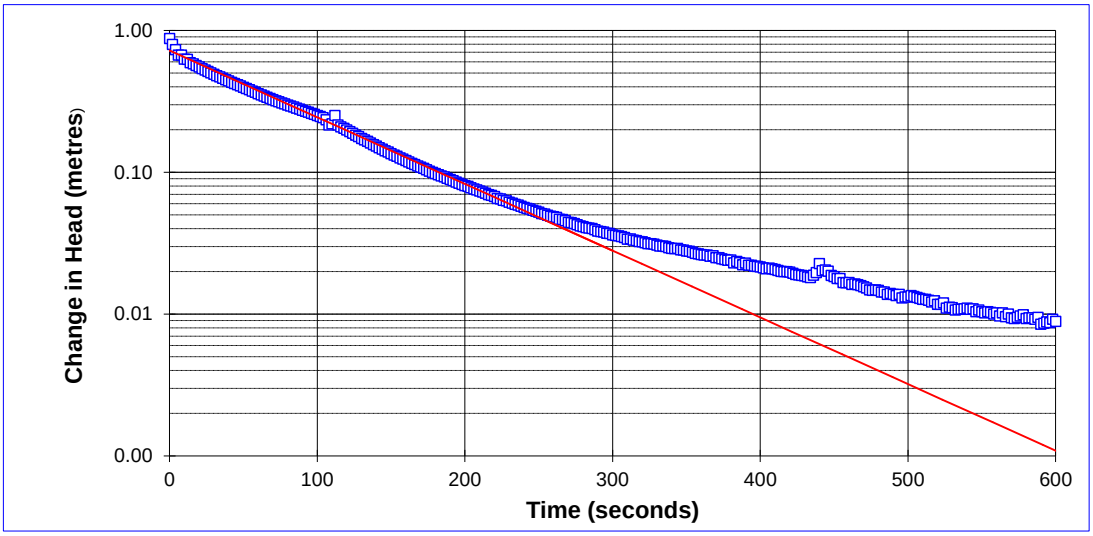
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.06**
L_e =	**1.00**
$\ln(R_e/r_w)$	**2.16**
y_0 =	**0.72**
y_t =	**0.03**
t =	**300.0**

RESULTS

K=	**8E-06**	**m/sec**
K=	**8E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/17/13

Analysis By: DH
Checked By: BH
Analysis Date: 4/22/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-7-2

INTERVAL (metres below ground surface)

Top of Interval =	**34.6**
Bottom of Interval =	**39.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

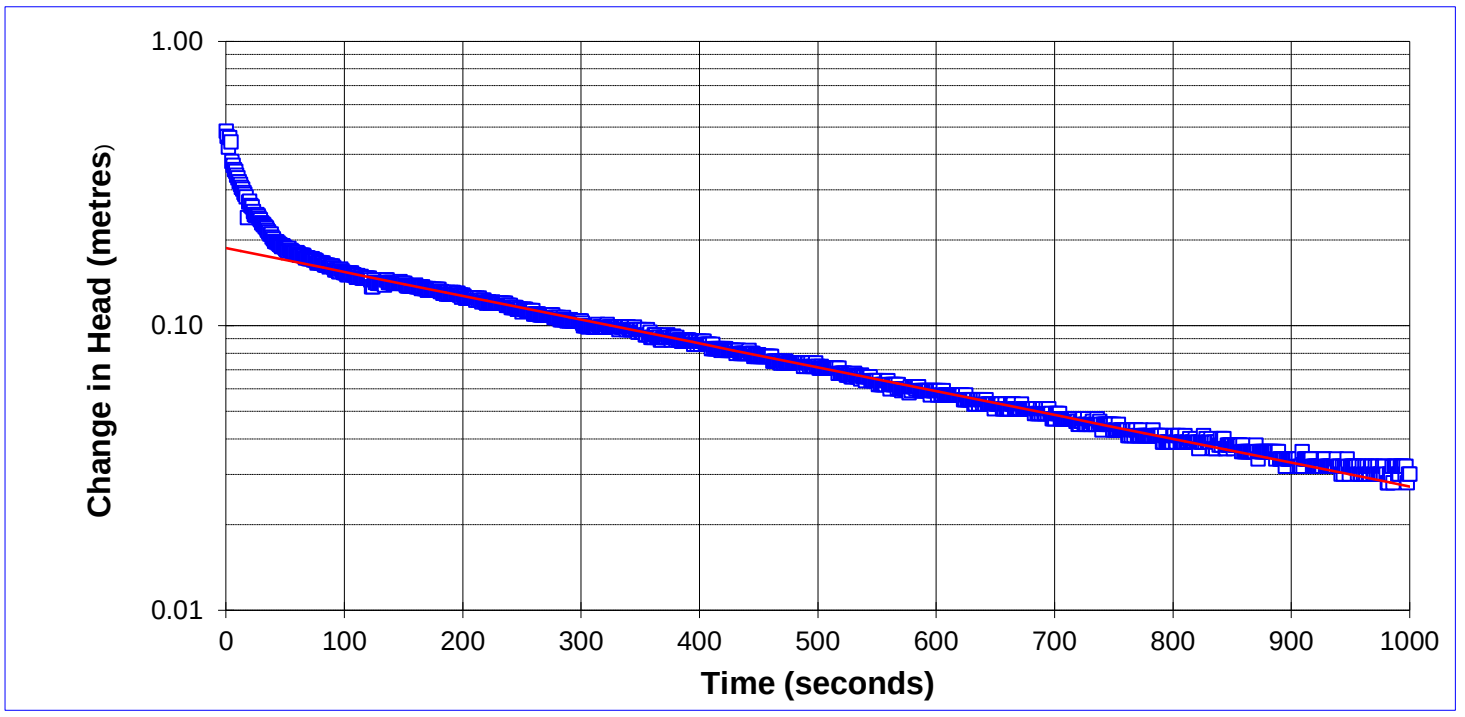
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.04**
L_e =	**4.87**
$\ln(R_e/r_w)$	**4.21**
y_0 =	**0.11**
y_t =	**0.04**
t =	**500.0**

RESULTS

K=	**2E-07**	**m/sec**
K=	**2E-05**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 07/09/13

Analysis By: DH
Checked By: BH
Analysis Date: 7/9/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-7-3

INTERVAL (metres below ground surface)

Top of Interval =	**28.0**
Bottom of Interval =	**30.3**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

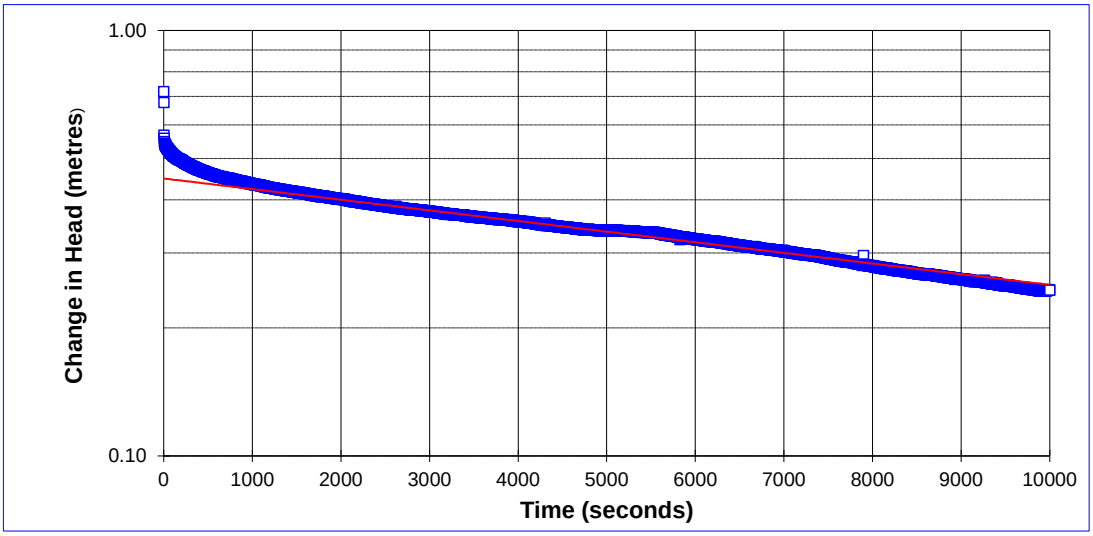
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**2.27**
$\ln(R_e/r_w)$	**2.62**
y_0 =	**0.40**
y_t =	**0.30**
t =	**5000.0**

RESULTS

K=	**8E-09**	**m/sec**
K=	**8E-07**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/25/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-7-4-2

INTERVAL (metres below ground surface)

Top of Interval =	**5.8**
Bottom of Interval =	**5.9**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

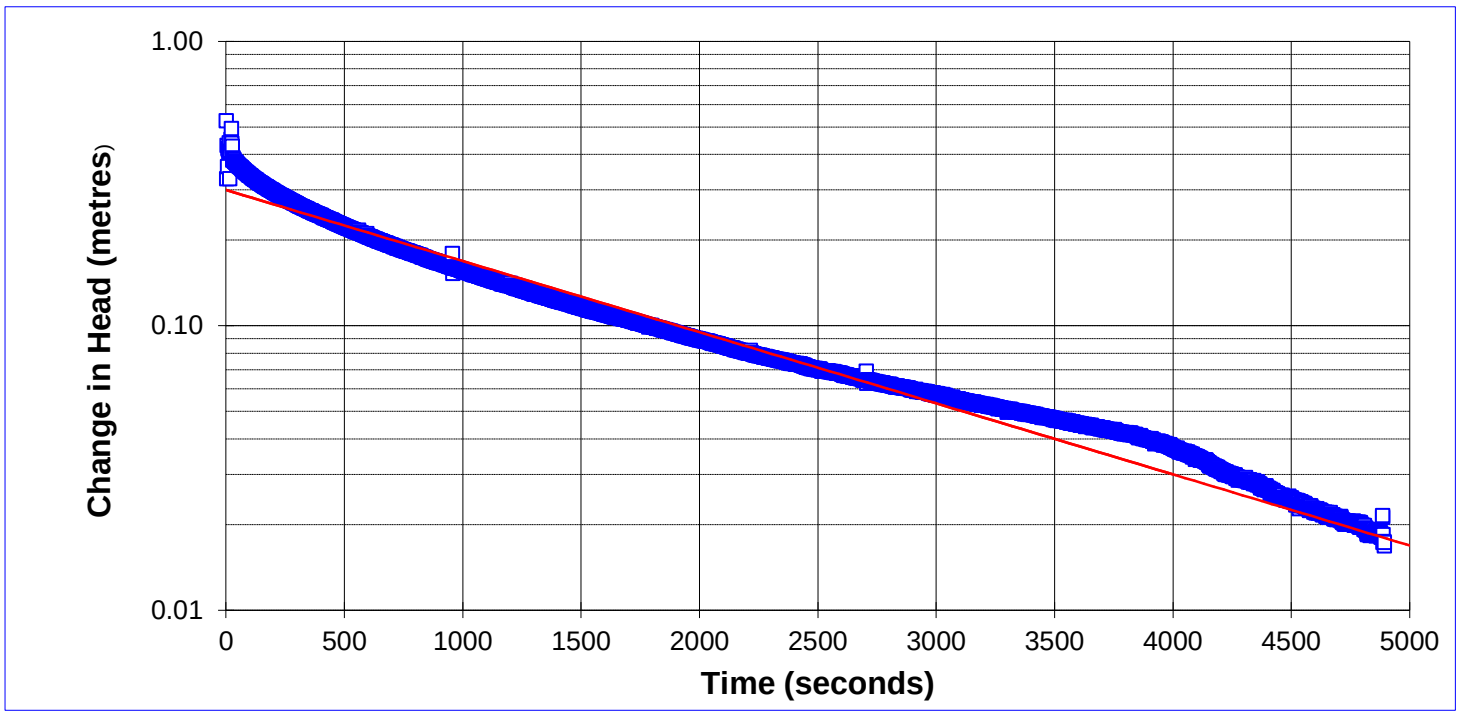
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.10**
L_e =	**0.15**
$\ln(R_e/r_w)$	**1.36**
y_0 =	**0.30**
y_t =	**0.03**
t =	**4000.0**

RESULTS

K=	**7E-07**	**m/sec**
K=	**7E-05**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/25/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/8/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-7-5

INTERVAL (metres below ground surface)

Top of Interval =	**0.5**
Bottom of Interval =	**1.7**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

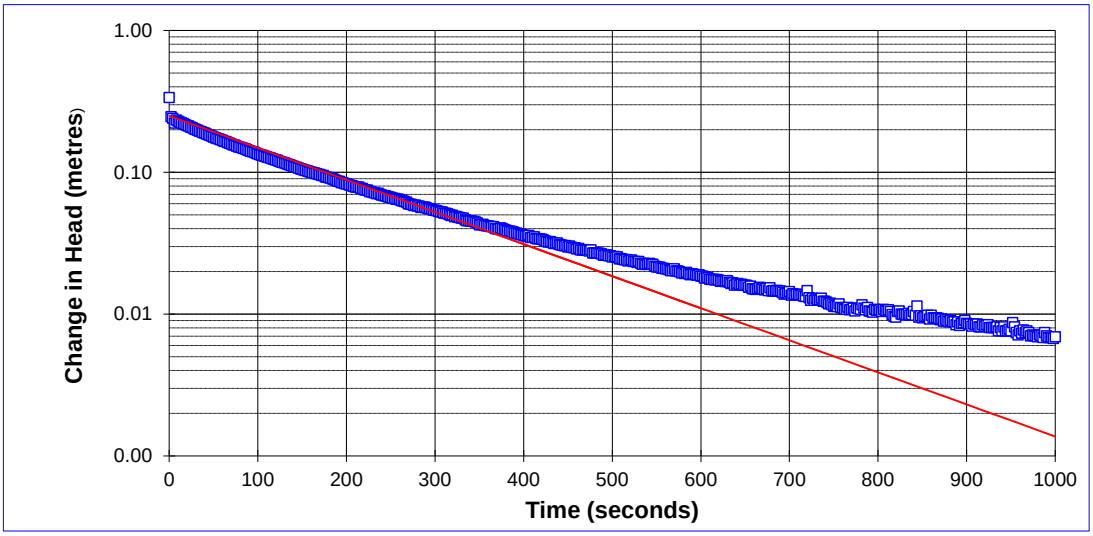
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.10**
L_e =	**1.18**
$\ln(R_e/r_w)$	**1.46**
y_0 =	**0.25**
y_t =	**0.01**
t =	**600.0**

RESULTS

K=	**2E-06**	**m/sec**
K=	**2E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/25/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 13-8-2

INTERVAL (metres below ground surface)

Top of Interval =	**0.3**
Bottom of Interval =	**1.5**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

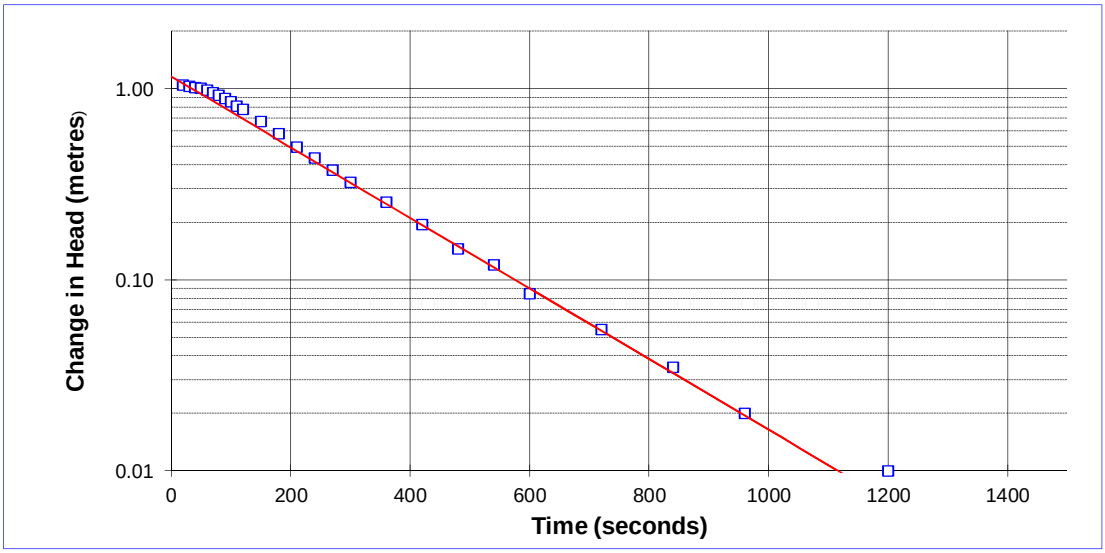
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**1.22**
$\ln(R_e/r_w)$	**2.31**
y_0 =	**0.09**
y_t =	**0.01**
t =	**600.0**

RESULTS

K=	**1E-06**	**m/sec**
K=	**1E-04**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/24/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 13-8-3

INTERVAL (metres below ground surface)

Top of Interval =	**4.4**
Bottom of Interval =	**4.7**

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} \ln\frac{y_0}{y_t}$$

where K=m/sec

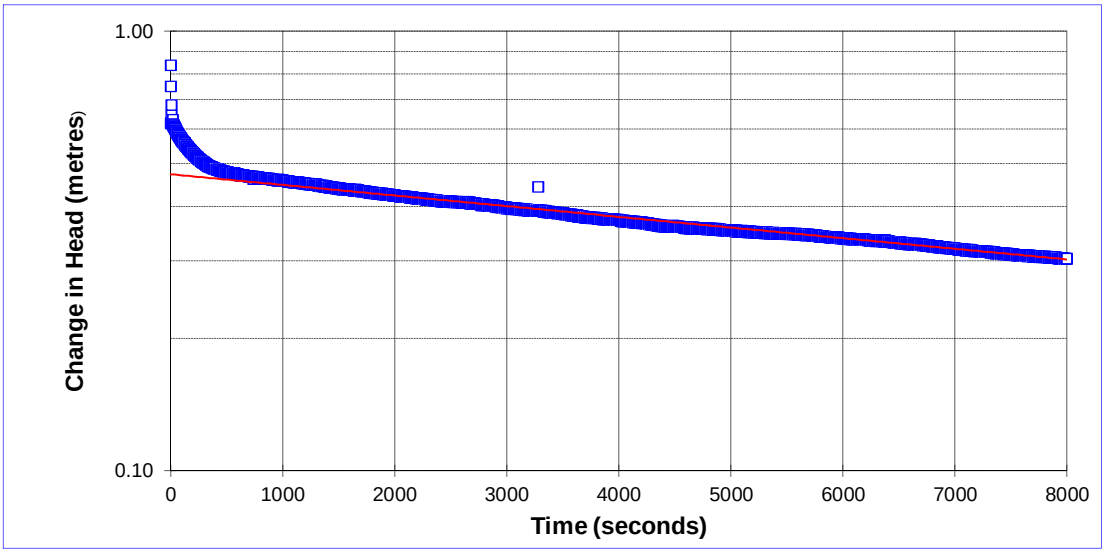
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.02**
r_w =	**0.06**
L_e =	**0.30**
$\ln(R_e/r_w)$	**1.19**
y_0 =	**0.40**
y_t =	**0.32**
t =	**4000.0**

RESULTS

K=	**3E-08**	**m/sec**
K=	**3E-06**	**cm/sec**



Project Name: CRRRC/EA Eastern ON/Boundary Rd
Project No.: 12-1127-00125/1000/0120
Test Date: 04/24/13

Analysis By: DH
Checked By: BH
Analysis Date: 5/7/2013